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# BRAITHWAITE'S RETROSPECT.

VOL. XLV. JANUARY—JUNE, 1862.

THE

# RETROSPECT OF MEDICINE:

BEING

## A HALF-YEARLY JOURNAL,

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.


EDITED BY

W. BRAITHWAITE, M.D.,

LECTURER ON MIDWIFERY AND THE DISEASES OF WOMEN AND CHILDREN AT THE LEEDS SCHOOL OF MEDICINE, ETC.

AND

JAMES BRAITHWAITE, M.D., Lond.



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CONTAINING A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THE FOLLOWING PAGES: SHOWING, AT A GLANCE, THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE LAST HALF-YEAR. (ARRANGED ALPHABETICALLY.)

## AFFECTIONS OF THE SYSTEM GENERALLY.

ALBUMINURIA IN FEVER.—When, during an early stage of the the fever, the urine becomes scanty and bloody, or highly albuminous, there are three practical points to which attention should be directed. First, give a guarded prognosis, for the complication is a serious one. Second, give alcoholic stimulants more sparingly and cautiously than when the kidneys are unaffected, otherwise the renal congestion is increased, and with it its effects, stupor and other cerebral symptoms. Third, to lessen the kidney irritation counter-irritate over the loins by mustard poultices, or better, by dry cupping repeated once or twice a-day. (Dr. G. Johnson, p. 21.)

CONTINUED FEVER.—In cases of continued fever, a large amount of ammonia is constantly being formed and given out from the body. This is invariably so in all cases in which the destructive metamorphosis of the tissues overbalances the assimilating powers, as seen after prolonged exertion; but it is especially the case in fevers. Dr. Richardson goes so far as to attribute to this super-alkalinity of the blood the special typhoid symptoms. He supports his hypothesis on the experiment of inducing the symptoms, or something resembling them, by the injection of ammonia into the veins of an animal. Very pleasing results ensue in such cases of fever from the administration of small doses of acids. The following is the best formula: ℞. Acidi hydrochlorici diluti ℥xx; syrupi ℥j; aquæ ad ℥j; alternâ quaque horâ sumat. In mild cases, the tongue begins to clean immediately, the thirst and diarrhœa much abate, and the repugnance to food is diminished. The hydrochloric acid is peculiarly suited to the purpose, being as it were a natural constituent of most of the tissues. It is a powerful arrester of decomposition of animal matters, both in and out of the body. The blood in cases of scurvy and purpura is very nearly chemically the same as in cases of low fever: everybody treats these chronic affections

with acids, why not also treat in the same manner an acute affection which corresponds with them, in one point at any rate. Hydrochloric acid is so large a constituent of the body, that it may almost be called a food rather than a medicine. As to the use of alcohol in fever it is well to be guided by the condition of the nervous system. A tremulous state of the muscles, marked especially by a quivering of the hands and fingers, is a good test of the necessity for it. If congestive pneumonia come on, do not hesitate to abstract a little blood locally; great relief will follow this, and as much relief seems to result from the same treatment when there is much abdominal congestion. This treatment appears inconsistent with the feeding and stimulation required. But "all blood is not blood," and the loss of a little of the half-dead circulating fluid of fever is no loss really, and is amply compensated for by the additional nutriment which a small blood-letting will enable to be absorbed. (Dr. T. K. Chambers, p. 13.)

Debility from Purulent Discharges.—*Hypophosphites.*—Purulent and mucous discharges are remarkable for the amount of corpuscles they contain "loaded with phosphates." It is not surprising, therefore, that cases in which there is prolonged and excessive purulent or mucous discharge of any kind, should be attended with considerable debility, and that the accompanying fever should be more frequently a hectic response than inflammatory. In the treatment, one indication is to supply the waste of phosphates, and the alkaline hypophosphites may be given with great advantage, exactly as in cases of phthisis. (Mr. J. Taylor, p. 385.)

Epithelial Cancer.—*Pernitrate of Mercury.*—The solution of pernitrate of mercury is easily made by dissolving red oxide of mercury in hot nitric acid. The local application of this agent is productive of the most striking effect in epithelial cancer. So far as the affection is curable by its perfect local eradication, the solution of pernitrate of mercury can effect a cure. Apply the solution abundantly over the surface of the growth. It gives great pain, but only for an hour or two. It has the effect of destroying a layer of the diseased growth, which comes away as a slough about the third day. The surface must be soaked with solution about twice a week, until the whole cancerous tissue is destroyed. The wound heals with the greatest facility, leaving scarcely a small firm cicatrix. The remedy destroys the diseased parts, whilst it seems quite powerless over the healthy tissues, except that it appears to quicken their healing energies. (Mr. J. Gay, p. 22.)

*Arsenical Mucilage.*—The author has "not yet seen a single

instance of the disease returning" in any case treated by this method. First, prepare the following mucilage: Arsenious acid and gum arabic powder, of each one ounce, mixed up with five drachms of water. With this paint over every morning a small portion of the cancerous mass. As the part becomes deadened it must be allowed to slough off, aided by a simple bread poultice. When all the diseased part has been thus got rid of, a carrot poultice should be applied during the night and a weak black lotion during the day (calomel one drachm, lime water one pint) until the part is entirely healed. The following medical treatment is most advantageous:—In persons of general good health, bicarbonate of soda, fifteen grains, night and morning; in persons of leuco-phlegmatic habit, one soda powder every night on going to bed, and the following draught twice during the day:—Hydrochloric acid, one drop; compound tincture of cinchona, one drachm and a half; to one ounce and a half of water. Full diet, with malt liquor, I consider to be absolutely necessary, avoiding spirits and tobacco, but wine I recommend to those who are in the habit of taking it. It is by this mode of treatment I consider such a change is produced in the constitution as to arrest and even destroy a cancerous action, as I have not yet seen a single instance of the disease returning in any of the cases thus treated. There are several cases now under treatment, which can be seen by any medical man who may desire to visit the hospital. (Dr. W. Marsden, p. 26.)

Gout.—*Lithia Water.*—It will be remembered that the use of lithia in cases of uric acid diathesis was recently brought under the notice of the profession by Dr. Garrod, (see 'Retrospect,' vol. xli., p. 29.) This recommendation is based upon the fact that lithia possesses a great affinity to uric acid, and that the urate of lithia is the most soluble of all the urates. Lithia has been discovered in the ashes of human blood and muscles, so that it is not an ingredient foreign to the body. Fortunately, a large quantity of it has been discovered to exist in two of the thermal springs of Baden-Baden—namely, the Fettquelle and the Murquelle. A constant effect of drinking these waters is an increased elimination of urine, the quantity of which is often doubled or even trebled; it becomes turbid after some time, and large quantities of a reddish sediment are deposited in it. Profuse perspiration, sickness, and diarrhœa also occasionally result, especially when the water has been taken for some time in large doses. In most cases of gout, the pain in the joints is increased at first, but most are cured within three or four weeks, if not of very long standing; and even in those

cases in which the finger-joints are enlarged from infiltration with urate of soda, much benefit results, the swelling diminishing considerably, or being entirely removed. For administration in this country the best way is to dissolve about five or six grains of carbonate of lithia in a tumbler full of water, and drink this three times a day; the dose may be increased if necessary to eight or ten grains. As the carbonate is more soluble in water impregnated with carbonic acid, soda water might be used. (Dr. Althaus, p. 407.)

Muscular Rheumatism.—*Acupuncture.*—In cases of muscular rheumatism, in which the pain is frequently severe and constant, and the remedies in ordinary use very ineffectual, insert a number of acupuncture needles deeply into the affected part, and allow them to remain about an hour. The result is frequently a speedy and complete cure. If there is any rheumatic paralysis remaining, galvanism is the best remedy to employ. Rheumatic paralysis is owing to a peripheral affection of the motor nerves. (Dr. A. Leared, p. 29.)

Remittent Fever.—*Anarcotine.*—Anarcotine (previously called narcotine), is obtained from the residue of opium left after separation of the morphia. It has not been used at all in England therapeutically, and yet it possesses properties well worthy our attention. Dr. O'Shaughnessy in the Indian Annals of Medicine states, that it is of such value in remittent fevers, that he gives it in the full expectation of correcting the next periodic return of the fever. It is, he considers, a more powerful antiperiodic than quinine. It produces a degree of general heat in the system when first administered. It does not produce any organic disturbance. It fails in only 3·6 per cent. of all cases treated by it alone. In small doses it acts as a tonic, increasing appetite, and improving the tone of the system generally. For this purpose, from half-a-grain to a grain of the sulphate, combined with a slight excess of sulphuric acid, is a sufficient dose. As an antiperiodic, from a grain and a half to six grains is the proper dose. (Dr. A. Garden, p. 19.)

Rheumatic Fever.—*Stimulants.*—Cases of rheumatic fever are constantly occurring in weak insufficiently-nourished people, complicated by a low form of pneumonia and by pericarditis. The quantity of effused fibrine into the pericardium is not very great, and the pneumonia is not very extensive and affects the surface of the lung chiefly. There is great prostration and profuse sweating. These cases require the free and timely use of supports and stimulants, combined with the administration of alkalies and opium, which latter drug

may be given in comparatively large doses without exerting its ordinary action on the system. There is a type of rheumatic fever precisely the opposite of that described, but it is seldom seen in large towns. The patients are comparatively strong and well-nourished. The skin is dry. Fever runs high. The quantity of lymph in the pericardium is often enormous. In these cases take blood, mainly in the hope of favouring sweating and the action of the kidneys. Without venesection, alkalies and sudorifics would be employed in vain. (Dr. L. S. Beale, p. 31.)

Small-pox.—*Indian Remedy.*—The North American Indians have a remedy which is believed by them to be always and invariably successful in "killing the disease." This is an infusion of the root of the "*Sarracenia purpurea*," or pitcher plant. The effect of the first dose is, to bring out the eruption. After a second and third dose, given at intervals of from four to six hours, the pustules subside, apparently losing their vitality. In a subject already covered with the eruption of small-pox in the early stage, a dose or two will dissipate the pustules, and subdue the febrile symptoms. The Indians keep a weak infusion of the plant constantly prepared, and take a dose or two during the day to "keep the antidote in the blood." (Dr. M' William, p. 33.)

Tropical Diseases.—*Quinine.*—In nearly all tropical diseases, attention once directed to the point will rarely fail to detect a periodic type. For instance, in dysentery a patient will have a rapid succession of bloody stools, with aggravation of tenesmus, and great prostration, at some certain period of the twenty-four hours. In such cases, one or two ten-grain doses of quinine, given in the interval, will often ward off the attack, just as it would that of ague. The malarious type of dysentery must be regarded and treated as essentially fever, with disease of the bowels superadded. One or two large doses of quinine must be given, and followed by as much ipecacuanha as the stomach can be got to bear. Opiates are also useful, and as much nutriment must be given as can be assimilated. Acute tropical capillary bronchitis is likewise essentially fever, and will frequently subside rapidly, if, after a smart emetic, frequent doses of quinine combined with ipecacuanha are given. The old plan of calomel and antimony too frequently resulted in death. (Dr. J. C. Cameron, p. 17.)

Typhoid Fever.—Typhoid fever is essentially contagious, and is propagated solely by contagion. The sewers and other places into which the virus from the bodies of patients passes,

are the principal channels through which the fever is propagated; and *they propagate it solely in consequence of being the channels for the diffusion of this poison.* Typhoid fever is no more the offspring of common sewage than mildew is the actual offspring of damp and decay. (Mr. J. Simon, Dr. W. Budd, p. 8.)

*To Arrest Contagion from the Intestinal Discharges.*—Place two ounces of caustic solution of chloride of zinc in the night-stool on each occasion before it is used by the fever patient. The discharges may thus be "entirely" deprived of their contagious powers. (Mr. J. Simon, Dr. W. Budd, p. 8.)

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## AFFECTIONS OF THE NERVOUS SYSTEM.

Chorea.—*Aniline.*—Aniline is one of the class of artificial alkaloids. It is contained in coal tar, and may likewise be obtained from indigo by distillation. A sulphate of this alkaloid given in doses of one grain three times a day, and gradually increased, is of marked benefit in cases of chorea. The violence of the movements decidedly diminish and a gradual improvement ensues. When the dose is increased some depression is produced, and frequently a peculiar blueness of the lips. (Dr. J. Turnbull, p. 39.)

Delirium Tremens.—The following will generally procure refreshing sleep and relief of nervous excitement: Make an infusion of two scruples of cayenne pepper in a pint of boiling water, strain it when cool, and make it into punch, adding sugar and lemon to suit the taste. It is very palatable, and will be taken by the patient ad libitum. (Mr. C. Ferneley, p. 57.)

Epilepsy.—*Bromide of Potassium.*—Bromide, like iodide of potassium, is sometimes of signal use in cases of epilepsy. Probably these cases depend on a local affection of the bones or membranes, which the remedy removes by its absorbent powers. Five grains may be given three times a day. (Dr. S. Wilks, p. 51.)

Neuralgia.—*Valerianate of Ammonia.*—The valerianate of ammonia is a remedy of great use in some of the severer forms of neuralgia. If retained in a state of crystallization, it rapidly decomposes and is uncertain in its action. It should be kept in solution. The solution must be of the strength that twenty grains of the salt may be given as the smallest dose. It may be given in this dose every two hours, in infusion of valerian as a vehicle. (Dr. O'Connor, p. 49.)

## AFFECTIONS OF THE CIRCULATORY SYSTEM.

Dropsy from Heart Disease.—*Elaterium.*—In these cases when the legs are enormously swollen, and the dyspnœa so urgent that the patient is unable to lie down, what can we do for the patient? The disease is mechanical, and the remedy must be likewise mechanical—we cannot raise the machine to the work, we must lower the work to the machine. Direct diuretics are useless, but by hydrogogues, and especially elaterium, floods of water may be draughted away. The patient is less exhausted by a good dose every other day, than by smaller doses more frequently repeated. Give a third or even half-a-grain about five o'clock every other morning. By ten or eleven o'clock an immense watery defluxion will have taken place, leaving the patient exhausted, but wonderfully relieved. It is well, however, to give a much less dose at first, because different individuals tolerate it so differently. A stimulant may be given at the same time as the hydrogogue. Under this treatment patients will often even gain strength, the dropsy disappears, the œdema of the lungs vanishes, and the patient regains a fair state of health. (Dr. H. Salter, p. 65.)

Plugging the Posterior Nares.—Prepare a few slips of lint about a foot long and half an inch wide. Double about two inches of the first slip over the end of a strong director and pass it along the floor of the nasal cavity as far as the posterior nares, then pack the rest of the slip in, but the extremity must be left projecting out of the nostril for the purpose of more easy removal. (Mr. J. Smyly, p. 178.)

Push through the anterior nares backwards the finger of a thread glove or a piece of linen sewed in this shape, then pack it with lint or some such material and draw it forwards so as to press on the surrounding parts. The only disadvantage attending this plan is the difficulty of unpacking it. (M. M. Desault and Larrey, p. 179.)

Popliteal Aneurism.—*Flexion of the Limb.*—In a healthy arm or leg, the effect of forcible and complete flexion is the considerable retardation of the blood flowing through the main artery, and the almost entire extinction of the pulse. In cases of aneurism, the following plan of treatment may be adopted: Roll the leg in a flannel bandage from the foot upwards, stopping below the tumour so as not to compress this. Bend the leg upon the thigh and retain it in this position by bandages attached to the ankle and leg. Confinement to bed is not now necessary. The complete flexion cannot be borne

continually, so that it is necessary to relax a little occasionally. On the fourth or fifth day the tumour will usually be found solidified. (Mr. E. Hart, p. 170.)

*New Mode of Compression.*—Place the patient in bed, on a firm mattress, in a half-sitting position. Let the thigh form an inclined plane in the opposite direction to that of the body, the leg and foot being placed horizontally on a soft pillow, in a frame or cradle raised some ten or twelve inches above the surface of the mattress, and the bed-clothes being kept from the foot by a foot-board. Now, apply a tourniquet to the groin, and another to the upper border of the popliteal space, care being taken not to make any painful amount of pressure on the nerve. From these arrangements the regulated but gradually increasing pressure on the inguinal artery, while reducing the stream of blood in that vessel, forces a larger stream into the internal iliac, and its large and ultimately anastomosing branches. The same applies to the pressure made on the upper part of the popliteal artery. Thus every part of the arrangement is made to harmonise. The pads used must not be broad, but elongated. (Dr. Bland, p. 176.)

Styptic.—*Sulphuric and Gallic Acids.*—The anti-hemorrhagic properties of these two acids are justly in high repute. They are never given together; yet when combined they act with far greater certainty and efficiency than when given separately. For ordinary cases give the following mixture: ℞. Acid. gallici ℥ss., acid. sulphurici dil. ℥j; liq. opii sed., ℥ss.; inf. rosæ co., ℥vj. M. Cap. coch. ij. mag. tertia vel quarta quâque horâ. (Dr. L. Earle, p. 410.)

## AFFECTIONS OF THE RESPIRATORY SYSTEM.

Artificial Respiration.—*New Instrument.*—First make a small pair of bellows capable of containing about forty cubic inches of air. A small valve should be made in the pipe, in order that the backward passage of air from the lungs may not be instantaneous. This may be effected by a small conical brass valve, moveable by the operator. The reason that instruments for effecting artificial respiration are not in much favour, is, that there has never been any effectual plan introduced for connecting the pipe of the bellows with the larynx so accurately that air does not return through the mouth instead of being forced into the lungs to inflate them. This may, however, be effected by surrounding the canula introduced into the larynx with a piece of sheet caoutchouc accurately fitting to it, and sorrounding it, except quite at the end. By means of a

smaller tube passing along the concavity of the canula, and into the interior of the caoutchouc cavity, this elastic material may be expanded to fill accurately the interior of the cavity into which it is introduced. The price of the whole is about two pounds, and it can be carried in the coat pocket. (Dr. W. Marcet, p. 95.)

Death from Chloroform.—*Tracheotomy.*—The cases on record are very few of recovery from suspended animation owing to an overdose of chloroform, and as a rule it may be considered that after the respiration has ceased, and the pulse become hardly perceptible at the wrist, death is inevitable. Now in many, if not in most cases, death is owing to spasm of the glottis, and tracheotomy gives us our best chance of restoring the respiration. It should, therefore, be performed in all cases immediately on the cessation of respiration, and when the livid tint of skin appears which is known to precede death. Do not hesitate a minute; the loss of every second diminishes the chance of saving life. Artificial respiration must also be employed; it is of the greatest importance in threatened death from chloroform. (Dr. W. Marcet, p. 406.)

Hæmoptysis.—*Gallic acid; Acetate of Lead.*—Gallic acid is a powerful styptic, given in ten-grain doses. It may be combined with antimony, opium, or digitalis, according to the case. The combination with antimony is practically useful when there is much excitement. Acetate of lead must be given in three-grain doses every half-hour or hour; and the alimentary canal must be swept out with sulphate of magnesia afterwards to prevent any symptoms of lead poisoning. The lead is of but little use in smaller doses. (Dr. C. J. B. Williams, p. 99.)

*Digitalis.*—There are three forms of tubercular hæmoptysis of very different frequency and gravity. The afflux or active congestion of the first stage of tubercular deposit, and the obstruction and erosion of the second stage, affect chiefly the smaller vessels of the lungs. The large ulceration of the third stage occasionally lays open a blood-vessel of considerable magnitude. The first two varieties, which are also the commonest in a very large per-centage of cases, cease spontaneously, and the endless list of drugs recommended by different writers (because *after* their administration the bleeding has ceased) are mostly worthless, and if not so are seldom or never required. It is in the terrible hemorrhage of the larger eroded vessels, and therefore of what is often advanced phthisis, that we have the most searching test of the value of any drug of this kind. It is often impossible to predicate

whether a slight oozing is not the commencement of a more considerable hemorrhage. Ipecacuan given in small and very frequently repeated doses, often produces protracted and severe exhaustion and nausea, and, moreover, it frequently utterly fails in moderating such a hemorrhage. The only remedy to be relied on is digitalis. Of this give from thirty to ninety minims of the officinal tincture daily, in four or six doses. Unless you can watch its effects, it is better not to administer it at all, as it is too much of an edge tool to be carelessly handled. It is often not the robust strong man who bears or requires the strongest dose. The patient must be kept quiet and in the recumbent position, and when the pulse has become very slow, reduce the dose of the drug. Tincture of digitalis combines well enough with dilute sulphuric acid during the attack, and with tincture of iron during the convalescence. (Dr. W. Brinton, p. 76.)

Phthisis.—*Hypophosphites.*—The diversity of opinion amongst medical men respecting the merits of the hypophosphites in phthisis arises from their using different salts, *i.e.*, whether a hypophosphite, or a phosphite, or a phosphate, more or less combined with a carbonate—the article of commerce being a combination of all these. A hypophosphite is the most soluble in the animal secretions of all the oxides of phosphorus, and is at once admitted into the venous system. If a dose of *pure* hypophosphite of potash or soda be given, it excites (even two grains only) a feeling of nausea, a slight pain within the chest much increased by repetition of the dose. Dr. Churchill asserts that the physiological action of the hypoposphites is twofold: "they increase nervous force, and are the most powerful hæmatogues; possessing all the therapeutic properties of phosphorus without the danger formerly attending its use. Experience has not confirmed Dr. Churchill's further eulogium, that the hypophosphites are curative in every stage of phthisis." The word *palliative* would be more in accordance with fact. In the earlier and middle stages of phthisis, the guarded introduction of an alkaline hypophosphite into the blood produces a glowing influence, as a respiratory excitant, expanding the chest; and, as a pyrogenic, increasing animal heat and nervous force, and removing erratic pains. It moreover increases appetite and cheerfulness, and controls expectoration, night sweats, and diarrhœa. It is well to combine the salt with a mild tonic as tincture of gentian, or an anodyne as a little morphia; otherwise a genuine alkaline hypophosphite is repulsive to the nerves of the stomach and the patient refuses to take a second dose. (Mr. J. Taylor, p. 372.)

Tracheotomy.—Between the lower edge of the cricoid cartilage and the upper border of the isthmus of the thyroid, a space exists in many subjects uncovered either by muscles or thyroid gland. It is true that sometimes a very small artery crosses the space from above downwards, and that occasionally a congeries of veins exists; yet upon the whole these obstacles are far less than are met with in the space below the gland, and nearer the sternum. Chloroform, as in other operations for dyspnœa, is inadmissible. The instruments required are a fine narrow scalpel with thin ivory handled-forceps, a stout hook, and proper canulas or elastic tubes. Assistants, with retractors, are required. After division of the integuments, keeping to the middle line, tear your way down to the trachea, using the nail of the left fore-finger and the handle of the scalpel. When the trachea has been fully exposed, seize the trachea with the hook, steady it, and raise it slightly whilst the requisite incision is made and the canula introduced. The hook used must be stronger than an ordinary tenaculum; it may be single or double. When foreign bodies are lodged in the lower part of the windpipe, we may, if there is no hurry from the presence of urgent symptoms, give chloroform and dissect carefully to expose the trachea low down to a considerable extent, in order to make an opening sufficiently large. But when the symptoms are pressing and desperate, we must act promptly and must proceed regardless of hemorrhage. The upper part of the trachea must be selected, and the scalpel may even be directed upwards through the cricoid cartilage. We must trust to a forcible expiration for the expulsion of the foreign substance. (Mr. A. M. M'Whinnie, p. 183.)

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## AFFECTIONS OF THE DIGESTIVE SYSTEM.

Aphthous Inflammation and Ulcer of the Tongue.—Aphthous inflammation of the tongue is caused by anything which irritates the alimentary canal. Chlorate of potash taken internally, and used as a lotion to the part, soon cures the case. There is a form of simple ulcer of the tongue, neither syphilitic nor epithelial in its character, yet simulating, and frequently subjected to the same treatment as these: if thus treated it gets worse. If the patient be kept on simple diet, and chlorate of potash used freely, it is soon well. (Mr. Thos. Bryant, p. 100.)

Cancer of the Tongue.—*Division of the Gustatory Nerve.*—Amongst the many sources of the peculiar painfulness of cancer of the tongue, irritation of the fifth nerve may be assigned

as occasioning the pain of so much of the tumour as lies in front of the fauces, the tenderness of the ulcer, the pain in the region of the parotid and side of the head, and the excessive secretion of saliva. Division of the gustatory branch of the fifth nerve gives immediate relief to all these symptoms. The best plan of operating is, to cut through all the soft structures on the inside of the ramus of the jaw, by an incision commencing immediately behind the last molar tooth, and extending three-quarters of an inch in a direction towards the angle of the jaw. The only structures which can be divided by such an incision are, the mucous membrane and a part of the mylo-hyoid muscle, with the gustatory nerve descending forward between them, about half-an-inch from the tooth, and nearly at a right angle with the incision. It is advisable to use a curved knife, and to cut quite to the bone, otherwise the nerve may escape division. This operation was first proposed by Mr. Hilton some years ago, but has never since then been performed. (Mr. C. H. Moore, p. 218.)

*Removal of the entire Tongue by Operation.*—This is most safely done by means of the ecraseur. First, cut a central opening between the lower jaw and the os hyoides, as deeply as can be done without fear of hemorrhage, and also with the object of having as little structure to crush through as possible. Through this opening pass a curved needle, sufficiently large to allow the chain of the ecraseur which is attached to it, to follow easily. The needle must be carried from the central line, obliquely towards the left side of the base of the tongue into the mouth, and out of the mouth, at a corresponding point on the right side, through the same external aperture by which it had entered. The chain must then be gradually tightened until the mass is gradually crushed through. A cord of twisted wire, or a piece of strong whip-cord may be substituted for the chain. (Mr. T. Nunneley, p. 214.)

Cleft Palate.—The most favourable cases for operation are those in which the cleft is complete or nearly so, for when it is only partial, after the separation of the soft tissues from the bone, the flaps do not fall inwards, owing to want of parallelism between the sides. The use of lateral incisions interferes with the nutrition of the flaps, but sometimes they are absolutely necessary. As for the importance of detaching the periosteum with the flap so insisted on by Prof. Langenbeck, it is impossible to detach the mucous membrane without the periosteum. (Mr. G. Pollock, p. 388.)

The principal reason of failure in the treatment of bad cases of cleft palate is too much having been attempted at one time.

Unless the opening in the hard palate is very small indeed, its closure must be the result of more than one operation. The periosteum must be separated along with the flaps made, for the purpose of strengthening them, and during their formation the knife must be kept well down upon the bone for this purpose, and a blunt instrument answers the purpose better than a sharp one. The steps of the operation necessary are these :—1. Pare the edges of the opening with a small scalpel. 2. Make an incision on each side, down to the bone, and parallel with the fissure in the palate. 3. Separate these flaps from the bone along with the periosteum. 4. Close the opening by sutures very neatly and carefully applied. (Mr. A. G. Field, p. 220.)

Constipation. — *Podophyllin.* — This is a greenish coloured amorphous resinoid powder, obtained by evaporation from an alcoholic solution of the root of the May apple *(Podophyllum peltatum).* Podophyllin is perhaps more free from the objections attached to aperients than any other remedy of this class. It operates slowly, easily, and after the manner of nature. In America it is used in ten-grain doses as a cathartic of similar character to the resin of jalap ; but for use as a natural laxative, the maximum dose is one grain. It is better in most cases to begin with half-grain doses, made into a pill with extract of taraxacum, which must be taken during breakfast, that it may operate next morning after that meal. (p. 400.)

Diarrhœa.—*Sulphuric Acid.*—Sulphuric acid is a much more rapidly efficient agent in the cure of diarrhœa than chalk, opium, copper, lead, pernitrate of iron, and others, but it is much less effective alone than in combination. When the stools are scanty and frequent, the administration of the acid is preceded by a dose of castor oil. When they are abundant and watery the acid may be begun at once :—℞. Acid. sulph. aromat. ℥xx. ; tinct. camph. comp., ʒj. ; ætheris chlorici, ℥x. ; spirit. menthæ pip. ʒss. ; syrupi rhœados ʒj. : decoct. hæmatox. ad ℥j. To be given every four, five, or six hours, according to the urgency of the diarrhœa. The object of the aromatics is the correction of the fæcal fermentation which is one of the chief conditions in the production of diarrhœa. (Dr. A. Clark, p. 107.)

*Diarrhœa from Ulceration of Bowel in Phthisis.*—The following is a "very capital mixture":—Extract of hæmatoxylon, ipecacuanha wine, and tincture of opium, made up with the ordinary chalk mixture. A mixture of nitric acid and ipecacuanha wine is also of great use. (Dr. Wilks, p. 350.)

Diphtheria and Cynanche.—*Guaiacum.*—Guaiacum is a specific in common sore throat; no matter what the stage of the complaint its action is always equally satisfactory. Guaiacum, along with chlorate of potash, is the remedy *par excellence* for diphtheria. For the attending debility our sheet-anchors are ammonia and bark. My prescription for all cases of diphtheria is the following: ℞. Potassæ chloratis ℈iv.; tincturæ cinchonæ comp. ℥ss; tinct. guaiaci. comp. ℥ss ad ℥vj.; mellis q. s.; aquæ ad ℥viij. M. Of this mixture from one tea to two tablespoonfuls may be given, according to age; but the interval between each dose must be regulated according to the severity of the case. In some cases of diphtheria a strong solution of nitrate of silver may be applied topically, to hasten the removal of the exudation, and to induce a more healthy action over the denuded surface. (Dr. J. W. Walker, p. 106.)

Hernia.—*Radical Cure of.*—The following plan of operating has been very successful, and is the same as Wood's, but slightly modified. The patient lying on his back, and his bowels having been that day opened, chloroform is administered if wished for. An incision, one inch and a-half below the spine of the pubes, is then made for about three-quarters of an inch, the *integument* of the scrotum only being cut through; the lips of the incision are now successively seized hold of, and by a blunt-pointed pair of scissors a dissection is made beneath the integument, for a space of two inches around the external opening of the inguinal canal. The conjoined tendon is now to be felt for by the finger of the left hand, which pushes before it some fascia. The needle recommended by Mr. Wood is then carried on the finger to the external abdominal ring, through which it is to be passed for a distance of about half an inch, or it is thrust through all the soft parts above. When the point has emerged through the integument, the needle is threaded by a silver wire, and then withdrawn with the wire. The first and most difficult portion of the passing the wire is then accomplished. The finger now seeks for the external pillar of the ring, and on it the needle, bearing a loop of the wire already introduced (*i. e.*, the wire simply bent on itself), is carried about half an inch within the canal, and all the softs parts above it are transfixed. The extremity of the needle appears on the surface of the abdomen, bearing a loop of wire, and it easily glides down the *free* end of the wire when the loop is held. And again, upon the finger having found the internal pillar, the needle bearing the wire is carried and made to pierce the tissues above, and a little within the canal. The needle having been disengaged from the wire is lastly withdrawn.

The free extremities of the wire are then passed through an aperture in an oval piece of thickish glass (three inches long by two broad), and the loop through another aperture a quarter of an inch distant, and having been pulled together as close as can be, they are twisted over each other, which securely fastens them. The testicles having been supported by some tow, and the parts washed, all is done. The wires must be unfastened on the eighth day and removed entirely on the next. (Mr. R. Davies, p. 201.)

Strangulated Hernia.—*Chloroform.*—Under the influence of chloroform, if the taxis is to succeed, the slightest manipulative efforts will suffice: by its use at first the danger of long-continued and repeated efforts at reduction is annulled, and the symptoms are not masked is when opium is used. Out of one hundred cases in which all other means had been employed and entirely failed, twenty were reduced under the influence of chloroform. Hence we may fairly conclude that we should primarily employ the means which have been proved to be so successful, and not waste time by the use of other remedies, when we possess one so incomparably their superior. (Mr. T. Bryant, p. 190.)

All the conclusions deducible from the statistics of operations point one way, and that is against the practice which demands more to be done in an operation than is absolutely essential. In strangulated hernia the mortality is nearly three times as great when the sac is opened than when it is left intact. Practically a knowledge of the contents of the sac is of little use. Chloroform must always be first administered, and the patient be brought completely under its influence. In strangulated femoral hernia, unlike inguinal, but few cases are reducible by the taxis, and the use of chloroform cannot be so highly recommended. In "old" cases of femoral hernia so few cases are successfully treated by the taxis, and so many more get better under operation, that it becomes a question whether it would not be better to put aside the taxis altogether in these cases. If the opening of the sac is unavoidable, it is better only to open the neck of the sac just sufficiently far to allow of the division of the stricture, but not the exposure of the hernial contents. (Mr. T. Bryant, p. 195.)

*Medical Treatment.*—During the latter period of my practice I have followed the following plan of treatment in cases of strangulated hernia, and with one exception, with uniform success, (and in this the treatment was not properly carried out). Send the patient six pills, consisting of ten grains of calomel and three of opium, and direct that he shall take

two immediately and one every half-hour subsequently; and also that he shall drink a cup of strong coffee without milk or sugar occasionally. The hernia generally speedily becomes soft and reducible. (Mr. W. Blower, p. 208.)

Umbilical Hernia.—*New Operation.*—Cut down upon and slit up the sac so as to expose the crevice-like opening into the abdomen. Clear away a good deal of the fat and cellular tissue so abundant outside the sac, otherwise it insinuates itself between the edges of the ring and prevents closure of the opening. The sac may be nearly all cut away likewise. Now, by means of a Price's needle introduce two, three, or even four sutures and draw the edges of the opening together. Sufficient distance is to be left between the edge of the opening and the entrance of the needle, and a considerable thickness of tissue must be included in the sutures. It is unnecessary to pare the edges of the opening. (Mr. R. Barwell, p. 206.)

Tape-Worm.—*How to administer the Oil of Male-Fern.*—Always give the draught mixed up with an ounce or two of milk; it is thus more effectual, milk being the favourite food of the parasite. The draught is made by mixing a drachm of the oil with half an ounce of mucilage. It must be taken fasting. The mixture is carried speedily into the intestines, to feed, and at the same time to poison, the hungry parasite which nestles there. (Dr. Fleming, p. 111.)

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## AFFECTIONS OF THE URINARY ORGANS.

Albuminuria.—At one time it was thought that death invariably resulted in all cases of albuminuria. This is now found not to be the case. In every instance in which recovery has taken place the urine has been bloody, and its specific gravity high, the system œdematous, and the general power good. In fact, in acute cases where congestion or subacute inflammation alone exists, we have much reason to hope for recovery. When the patient is strong venesection hastens recovery. The best treatment is a persevering use of the pulv. jalapæ comp., and warm baths taken about once a day to encourage free action of the skin. In no single instance in which the urine has slowly and insidiously become albuminous, in which the system seldom becomes œdematous, in which the urine never presents a bloody tinge, have I known recovery to occur. In such cases the kidneys are small, contracted, and granular. In the former class of cases the sp. gr. of the urine seldom descends below 1012, in the latter it is generally below it. (Dr. T. Williams, p. 116.)

In a case of albuminuria complicated with squamous skin disease, it was found that the arsenic given for the cure of the latter exercised a very beneficial effect upon the quantity of albumen in the urine. The urine is described as having a smoky appearance, and the renal anasarca was acute in character. The albumen ultimately almost disappeared, and the patient left the hospital "comparatively well." The arsenic must have acted as a powerful tonic. (Dr. Farre, p. 122.)

Diabetes.—Patients sometimes, though rarely, get rid of their complaint, and if there is anything that can favour the production of such an issue, it is the keeping down their sugar to the utmost extent possible. By restoring the blood as near as possible to its natural constitution, we conduce to the healthy performance of the nutritive and other operations of life. (Dr. F. W. Pavy, p. 127.)

Diabetes is essentially a defective assimilation of the starchy and saccharine matters of food; the sugar filters through the system in obedience to the simple laws of physics. But unfortunately, the presence of sugar in such quantities alters the natural qualities of the blood, so as to unfit it for performing the healthy operations of life. By a *purely animal diet* the amount of sugar can be kept down to a thousand grains a day, when this is attained, the patient does not in any way know of the existence of his complaint, otherwise than by the necessity of restricting himself to the regimen essential to attain this object. With such an amount only of sugar escaping, the blood remains adapted for the healthy performance of all the functional operations of life. (Dr. F. W. Pavy, p. 125.)

A *gluten powder* is prepared by Mr. Blatchley, of London, which can be made into biscuits of an agreeable flavour, and being as free as possible from starch, is peculiarly suited to diabetic patients. These biscuits cannot be furnished so cheaply as the bran biscuits, and are therefore less fitted for hospital use. The biscuits can be bought ready made, or they may be prepared at home from the gluten powder. (Dr. J. Camplin, p. 126.)

Hæmaturia.—By a look with a microscope, and one or two plain questions, you may determine the seat of any hemorrhage in the urinary tract. If we find blood-casts of the uriniferous tubes, we know that the hemorrhage is renal. If no casts are found, yet the hemorrhage is abundant, it is probably not from the ultimate structure of the kidneys. If the blood is passed by itself, it is urethral, or if it is confined to the first jet of the stream. If, again, it is confined to the last drop or

two, it is probably urethral, and situated in the bulb. If the blood is never passed except by an act of micturition, and intermixed with urine, and there is a clear absence of casts, then it comes from above the urethra and below the ultimate kidney structure. (Dr. H. Salter, p. 112.)

Hydrocele.—*Wire Setons.*—In the majority of cases iron wires passed through a hydrocele will cause merely adhesive inflammation, and thus effect a speedy and simple cure. But the result of extended investigation shows that, in a by no means small per centage of cases, notwithstanding every precaution, suppuration will take place. (Dr. J. D. Gillespie, p. 244.)

Lithotomy.—The principle is undoubtedly sound to keep the incision within the prostate in adults, but there is far more danger in attempting to drag a calculus through an opening of insufficient size. In fact, insufficient internal incisions are equally dangerous with those which are too free. Destructive inflammation of the delicate structures about the neck of the bladder is soon produced by the forcible dilatation, and the dragging downwards of the neck of the bladder, which insufficient incisions render necessary. The true cause of death in the majority of cases, is violence in opening up the internal part of the wound, and laceration of the tissues there, and not the passage of urine into the intercellular connexions about the neck of the bladder. The first is happily in the operator's power to avoid, the second would be often unavoidable with a stone much above the average size. (Mr. H. Thompson, p. 229.)

It is the best plan to use a staff of moderate curve. The curve should not exceed two and a-half inches, the rest of the staff being straight. The urethra is not distorted by this instrument, as it must be by a staff of large and long curve, or with a straight staff. (Mr. Le Gros Clark, p. 235.)

Oxalate of Lime in the Urine.—Oxalate of lime occurs in two forms in the urine; 1st, in octohedra, 2nd, shape of dumb-bells. The first is of little importance, and is found in the most opposite conditions of the system. It probably indicates that the process of oxidation is not fully performed. Dumb-bell crystals are, however, of considerable importance; unlike octohedra they are never formed in the urine after it has been voided. These crystals are formed, probably, in the secreting tubes of the kidney. These are liable to cause hæmaturia, and to form the nuclei of larger concretions. To diminish the tendency to the formation of these crystals, attention must be paid to the general health, and especially to the state of the digestive organs. Iron, quinine, and other tonics may be given accord-

ing to the general state of the patient; but air, exercise, short of fatigue, and a diet regulated as to quantity according to the proportion of nutrient material required by the system, are of the first importance. To get rid of the crystals already formed, let the patient drink large quantities of alkaline fluids, as Vichy water. (Dr. L. S. Beale, p. 114.)

Stricture of the Urethra.—A case well illustrating the efficacy of complete division upon a grooved director of all the thickened constricting parts is related by Mr. Syme. He shows that the blade of the knife must be introduced beyond the diseased part and the whole divided completely. The knife, if simply pushed along the groove, often fails to divide the thickened part. (Prof. Syme, p. 222.)

Varicocele.—The treatment of varicocele is now very simple and effectual. Introduce a needle beneath the vein or veins to be obliterated, and pass a figure of 8 ligature over its extremities, so as to include a portion of skin and the dilated veins. The circulation through the veins is, of course, arrested by the pressure. In a precisely similar way, apply another needle at about an inch distance. Now divide the veins subcutaneously. In a few days the veins will be effectually obliterated and the patient may resume his ordinary employments. If there is a pendulous condition of the testicle, all the skin intermediate between the two needles may be removed, and the subjacent enlarged veins also. The gap left is readily closed by bringing the two edges in contact by sutures, and no hemorrhage will ensue, in consequence of the vessels being closed by acupressure. Care must be taken during the operation to compress the same veins above and below the incision, and not to divide any that are not thus compressed. Great care must be taken to avoid the vas deferens. This may always be recognised by its peculiar hardness and irregular surface, and can be easily separated from the veins, before either the needle or the knife is passed beneath them. (Mr. H. Lee, p. 239.)

For the manner of ligaturing the veins subcutaneously pursued by Ricord, as modified by Mr. J. Tufnell, see woodcut and description of operation at p. 242.

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## AFFECTIONS OF THE BONES, JOINTS, ETC.

Amputation of the Forearm.—A plan followed with success is to make a circular incision through the skin, draw it well back, then make flaps of the muscles, and finally saw through the bones. (Mr. P. Hewett, p. 132.)

Contracted Joints.—*Forcible Extension.*—The cases in which forcible extension must not be tried, are: 1. Those in which the inflammation, if it has existed, is apt to recur. 2. When the change has been of very long standing. 3. When there is a strongly-marked diathesis (strumous, syphilitic, &c.) 4. When the skin is involved and adherent over the joint, soundness of skin being an essential condition to success. In some cases in which the contraction is owing to rigidity of muscles, the contraction is reducible under chloroform with the use of very little force. (Mr. J. Paget, p. 149.)

Deformities of the Feet—*Mechanical Treatment.*—Previous to 1832 most cases of deformity of the foot were treated by mechanical means only; since that period tenotomy has been employed in most cases, certainly with the effect of more rapidly curing the deformity, but as certainly with the effect of leaving a foot so weakened by the treatment as to be incapable, in many cases, of performing its proper part in the motions of the body. Out of seven cases in which other tendons than the tendo-achillis were divided, and opportunity offered to examine after death, it was found that in every one of them the severed tendons were not united at all, or had become attached to the bone or surrounding parts so as to be of no possible use. To divide the peronei, the tibialis posticus, and flexor longus digitorum, is almost equivalent to producing complete paralysis of these muscles. Section of the tendo-achillis is sometimes, but not, as at present, indiscriminately required; and *division of the other tendons is hardly ever necessary.* We must in fact return to and rely solely upon mechanical treatment. In the mechanical treatment we must recollect that the deformity may result from excessive contraction of the prevalent muscles, or deficient action of their antagonists: and that our efforts in either case must be directed to applying a power in the direction of and as much like the deficient muscle or muscles as possible, and at the same time the *foot must be allowed its use.* These indications are thus carried out:—A broad and long piece of strapping-plaister, spread on a thick material, is made to adhere over the origin of the muscle and along its course. Upon this is laid a piece of sheet tin, long enough to reach from the upper part of the leg to just above the ankle, and carrying at its upper part a wire loop; the piece of strapping is turned back over it, and lies with its adhesive side outwards. Another piece of strapping is placed on the foot upon the insertion and along the course of the tendon; the end of this strapping reaches to the bend of the ankle, and is folded over (the two sticky sides

opposed), and an eyelet let into it. An assistant is now to hold the limb as near as possible in the right position, while it is being smoothly strapped from the toes to the knee, leaving out the end (with its eyelet) of the piece on the foot and the wire loop at the upper part of the leg. Between these two—the one representing the origin, the other the insertion, of the muscle—there is to be stretched an india-rubber spring, at a proper degree of tension. Thus, while there can be considerable force used in the direction of any muscles in the leg, the *point d'appui* is so supported by a loop of strapping, which takes its bearings from both the skin of the leg and the surrounding plaister, that no injurious pressure occurs anywhere. Some little contrivances are necessary also for changing the direction of the force. (Mr. R. Barwell, p. 161.)

Diseases of Joints.—The opinion is generally held that scrofula is almost universally the cause of disease of the joints. This is very far from being the case. Another opinion that long and perfect rest to joints induces disease leading to anchylosis is also incorrect. Again, when in disease of a joint, the articular ends of the bones can be felt grating upon each other, the surgeon is apt to consider this symptom as fatal to any probability of the repair in the joint. This also is a mistake. This grating occurs when, the cartilage being gone, the hard lamella of bone beneath it remains worm-eaten it is true, and cribriform in appearance, yet, if accurate apposition of the bones be effected and complete rest of the parts be maintained, quite capable of repair; and such bones do indeed, by anchylosis, become quite firmly united, no operation whatever being required. It is, however, a question if the removal, by absorption, of this cribriform hard layer of bones must not precede anchylosis. Diseases of joints in children follow a peculiar course. In adults the individual structures of a joint may be diseased separately; in children, this isolation of disease is rarely seen, and there is a tendency to diffuse disease contemporaneously in all the articular structures. The same tendency to diffuseness exists in all inflammations in children; this is especially seen in the chest, and the head. (Mr. J. Hilton, p. 133.)

Dislocation of the Shoulder-Joint.—The object of counter-extension is to prevent the yielding of the scapula to the tractive force employed to reduce the dislocation. Nothing does this so effectually as the fixing of the opposite scapula by counter-extension at the wrist. By simple traction at the two wrists, most dislocations may be reduced. The patient must be placed in a chair, and the traction must be steady and

horizontal. In case the object is not effected by these means, the operator may place his foot on the chair, and his knee in the axilla, and thus raise the head of the bone, using the arm as a lever. (Prof. N. R. Smith, p. 151.)

Hip-Joint Disease in Children.—When the early symptoms of disease of the hip-joint are present, as lameness, flexed thigh, slight local heat—do not hesitate, but tell the parents plainly that for the cure of the case it is necessary that the child should lie down for two or three months, with a splint on the limb to keep the joint quiet. In hip-joint disease, the only remedy required, and indeed the only remedy sufficient, is perfect rest, secured by the recumbent posture in bed. The best splint is made by adapting to the limb and hip a large piece of wet leather previously cut of the required shape. A bandage is placed evenly and tightly over the leather. When the leather has become dry, it is removed, lined with wash-leather, and an iron foot-piece and proper straps being affixed, it is complete. It must be worn constantly until all symptoms of inflammation have disappeared. (Mr. J. Hilton, p. 141.)

Housemaid's Knee.—These cases may be cured in the following manner without the least pain, confinement, or danger, the patient doing her usual work, except kneeling. Apply a simple plaister and bandage in the manner Scott recommends. A fortnight is sufficient for the cure; and perhaps two applications will be necessary. The following is the plaister:—Cut a piece of leather of sufficient size to cover the knee above and below the joint, and to nearly meet behind; spread this with emplastrum plumbi. Cut some white curd soap into thin shavings, and about the same weight of emplastrum plumbi: add about a teaspoonful of olive oil. Melt together over a slow fire. Take half an ounce of muriate of ammonia (commonly called sal ammoniac); pound this in an earthenware mortar as fine as you can. Pour the melted soap plaister into the middle of the plaister spread on leather so that it may cover the upper surface of the knee; let it be nearly an inch thick. Now while it is liquid and hot, mix into it the powdered muriate of ammonia, and apply it as warm as the patient can bear. Apply a roller *secundem artem*. (Mr. R. W. Martyn, p. 150.)

Injuries of Skull.—Never operate by trephining for any injury of the skull simply because the skull is injured, and you have reason to suspect depression of bone; wait until symptoms of compression actually occur. In many bad cases, by waiting patiently, by keeping the patients at perfect rest, by subduing inflammatory action, by assisting in the removal of fragments of bone when they became loose, we may procure recovery without any operation at all. (Mr. J. F. West, p. 166.)

LATERAL CURVATURE OF THE SPINE.—At the commencement of cases of lateral curvature, the best treatment is a combination of lying down, to the extent of four or six hours a day, together with light gymnastic exercises. This when curvature is threatened rather than positively formed, but if curvature has actually taken place, then mechanical support must be combined with the partial recumbency and light gymnastic exercises. The best medicinal treatment consists in the administration of hypophosphite of lime and preparations of of iron. Five grains of the lime may be dissolved in a wineglassful of water, to which tinct. ferri sesquichl. may be added, and taken twice a day, at, or directly after meal times. Cod-liver oil may also be given. The best localities as a residence for such patients are high and dry places on a chalk soil. The best couch in such cases is one made by Ward, of Leicester Square. The inclination can be varied at any angle, from that of an upright chair to a horizontal couch. The muscular debility theory of curvature is very logical and attractive, but it can only apply to a very limited number of cases. No confidence can be placed in the curative effects of any system of special muscular exercises, whereby the muscles on one side of the spine are sought to be particularly developed. Such a result is practically impossible. Used judiciously, however, in conjunction with other means, muscular exercise is of great value. In delicate girls with slight curvative, the lightest form of instrument, such as that known as the Eagland belt, is quite sufficient. The instrument may be made more powerful and a second plate may be added. (Mr. W. Adams, p. 153.)

NEW FRACTURE APPARATUS.—There is no form of injury to either the shoulder or arm, including fracture of the clavicle, to which the apparatus to be described is not better suited than any that has been hitherto employed. The apparatus consists of a bar of iron one inch wide and an eighth of an inch thick, bent at the shoulder and elbow joints, and armed with five carefully covered pads, two of these being fixed, one at each extremity of the bar, and three of them capable of sliding into various positions. The upper or shoulder pad, with a basis of flat metal, is so bent as to fit accurately on the shoulder, extending over the scapula and clavicle, and by the assistance of a strap passing through the opposite axilla and buckled by its ends to the shoulder pad, arresting their movements. The other fixed pad is intended, by being secured round the wrist, to prevent all shifting of the instrument or motion in the injured limb. The other pads are made movable, first to facilitate the dressing of the wounds where these exist, and secondly to assist the close apposition of the limb to the splint. (Mr. C. Evans, p. 363.)

Rectangular Flap Amputation.—Whenever amputation is performed by the rectangular flap operation of Mr. Teale, (see Retrospect, vol. xxxviii), a durable cushiony stump is obtained, capable of bearing a considerable amount of direct pressure on its face, and containing neither large nerves nor bloodvessels. This operation is especially useful in amputations at the lower third of the thigh and leg; it has only one drawback, that arising from the length of the long flap, necessitating that the bone must be sawn through higher up than in either of the ordinary modes (the circular and the transfixion methods). In other parts of the thigh and leg the short anterior and long posterior flaps obtained by the ordinary transfixion method answer, when properly shaped, everything which can be desired. The operation is done by clean sweeps of the knife in contrast to a somewhat tedious dissection, and the soft parts from behind make a better cushion than those from the front of the limb. (Mr. O. Pemberton, p. 129.)

Spreading Gangrene.—*Amputation.*—There can be no doubt that the practice of operating at an early period in spreading gangrene is not a safe, and often indeed, a disastrous measure. Nothing is gained, and a great deal is at stake by the surgeon's early interference in such cases. (Dr. L. Adams, p. 168.)

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## AFFECTIONS OF THE SKIN, ETC.

Burns and Scalds.—*Sulphur Ointment.*—Sulphur seems to have almost a specific virtue in cooling and soothing the irritation of the part burnt. If nothing has been done previously, cover over all the injured surface with a pretty stiff ointment, composed of simple hog's lard and flowers of sulphur, spread in the form of a good thick layer on linen cloth. Under this simple treatment, burns and scalds of a slighter character heal in two or three days. Another good ointment is made as follows:—Place a mixture of common leeks and hog's lard in an earthen vessel, and allow it to simmer by the fire, until the leeks become quite soft and tender; strain through muslin. The ointment is of a lightish green colour, and has a slight garlic odour. (Dr. J. Y. Myrtle, p. 258.)

Goitre.—*Biniodide of Mercury.*—In England the following plan suffices for the cure of goitre. Having made an ointment of the strength of ℈i. of biniodide of mercury to the ounce of lard, rub a little freely into the part night and morning. After each application the part must be covered with oiled silk. In a few days the full effect is produced, when the

mercurial ointment may be laid aside and simple spermaceti ointment and oiled silk substituted. (Mr. H. M. Greenhow, Mr. T. Stainthorpe, pp. 261, 415.)

Indolent Ulcer on the Leg.—First wash the leg well; after so doing fill up the excavated ulcer with finely powdered carbonate of iron, afterwards applying a large linen pad, without any moisture coming near; then envelope the whole limb in a starched bandage, allowing it to remain three weeks or so, according to the extent of ulcerated surface. The patient need not be confined to bed, or be enjoined absolute rest, he can even be allowed to walk a little every day. The limb must be kept perfectly dry. (Mr. J. Mitchell, p. 261.)

Lupus Exedens.—The local application of a solution of pernitrate of mercury has effected a cure in some cases of this disease. (Mr. J. Gay, p. 24.)

Parasitic Skin Diseases.—In parasitic diseases of the head in children, I find no application so satisfactory as the compound sulphur ointment of the Hospital for Skin Diseases:—℞. Sulph. sublim., lbss.; hydrarg. ammonio-chloridi, hydr. sulph. cum sulph., āā ℥ss. Leviga simul, dein adde olivæ olei, ℥iv.: adipis recentis, ℥xvi.; creasotonis ♏xx. Misce. If the disease has made some progress it will not be cured under several months. (Dr. T. Hillier, p. 254.)

Varicose Ulcer.—Apply an ointment spread on lint, containing a very large quantity of an alkaline earth, such as chalk. This forms a good protection to the sore and neutralizes the foul acid secretion which flows from it. Apply over this a "domette" bandage, evenly and neatly, and reaching from the foot to the knee. An ulcer thus treated generally heals with extraordinary rapidity, in spite of the patient walking about as usual. "Domette" is a mixture of flannel and cotton, used chiefly for making shrouds. (Mr. J. K. Spender, p. 260.)

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## SYPHILITIC AFFECTIONS.

Indurated Chancre.—The local application of a solution of pernitrate of mercury, together with the administration of mercury internally, has been satisfactorily used in this disease. It is not necessary, were it possible, to continue the application until the whole of the induration is gone, but only until the wound shows unmistakable evidence of healing in. (Mr. J. Gay, p. 25.)

Syphilis.—*Calomel Vapour Bath.*—It is but seldom that patients can be induced to continue the internal use of mercury suffi-

ciently long to be cured of real syphilis. The unpleasant effects produced pass away on his leaving off the remedy for a time, and feeling better, he is convinced he has acted properly in discontinuing its use. You may patch up the disease by giving the remedy internally, but it will return over and over again. The plan of introducing the remedy by mercurial inunction is far more successful than any other plan, and the deleterious action of the drug upon internal organs is avoided. The amount absorbed into the blood produces its influence equally throughout the system, and is not conveyed direct to the liver, as when the medicine is administered internally. But mercurial inunction is a dirty remedy, and, requiring considerable labour and perseverance on the part of the patient, it is with difficulty that they can be induced to continue its use for any length of time. Fumigation of the surface of the body, by means of the vapour of calomel, possesses the advantages of inunction, without some of the objections to which it is liable. Calomel is a definite chemical compound, unaltered in composition either by heat or by moisture, and may be relied upon for producing its action as certainly as any medicine administered internally. So much is this the case, that for some years I have altogether discontinued the use of mercury internally in the treatment of syphilis. (Mr. H. Lee, p. 251.)

*Conveyance of Syphilis by Vaccination.*—There is no doubt but that syphilis is readily conveyed from one child to another by the process of vaccination. To avoid any chance of this:—1. Examine carefully the child from whom the lymph is taken. 2. Try to learn the state of the parents' health. 3. Choose, in obtaining the lymph, such children as have passed the fourth or fifth month, as hereditary syphilis, in general, appears before that age. 4. Do not use the lymph after the eighth day of the existence of the vesicle, as the lymph on the ninth and tenth days becomes dull by mixture with pus, which latter may be of an infectious nature. 5. In taking the lymph with the lancet, avoid hemorrhage, as there is less danger with pure and transparent lymph. 6. Do not vaccinate too many children from the same supply. (Dr. Pacchiotti, p. 247.)

Syphilitic Tumours and Ulcers of the Tongue. — Syphilitic tumours are formed in the tongue precisely as in other parts. They are composed of badly organised inflammatory products. Sometimes the tumour thus formed is of a diffused character. After a time ulceration takes place, the result of degeneration of the abnormal tissue. Now these results are liable to be mistaken for cancer, which runs pre-

cisely the same course. The depth of the excavation, the irregularity of the surface, and the induration, raggedness, and eversion of the edges in cancerous disease, are the points upon which to ground the diagnosis. Under the use of iodide of potassium and iron, or bichloride of mercury and tonics, the syphilitic disease is curable; the cancerous is amenable to no treatment except removal. (Mr. T. Bryant, p. 100.)

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## AFFECTIONS OF THE EYE AND EAR.

Atropine Paper.—Instead of using the ordinary solution of atropine to dilate the pupil, it is a good plan to soak fine green tissue paper in a solution of atropine; dry it, and cut it into small pieces one-fifth of an inch square. Each of these squares should contain as much salt as suffices to dilate a pupil. One may be placed on the sclerotic conjunctiva below the cornea without causing any irritation, and with the effect of dilating the pupil just as well as when the solution is used. (Mr. J. F. Streatfeild, p. 272.)

Cataract.—The patient being recumbent, desire him to look upwards, the operator at the same time depressing the lower lid. By means of a pair of ordinary artery forceps, the teeth of which have been slightly rounded off, sieze a fold of the loose ocular conjunctiva with a portion of the tissue beneath (including if possible a few fibres of the inferior rectus). The forceps must now be held by an assistant depressed on the cheek; it thus serves to depress the lid, and to firmly fix the eye, during the operation. (Mr. J. F. France, p. 268.)

Deep Ulcers of the Cornea.—*Paracentesis.*—Deep ulcers which threaten to perforate the cornea will often rapidly assume a healthy action after the tension of the cornea has been diminished, by letting off the aqueous humour; and sloughing ulcers will, under the same treatment derive similar benefit. To effect this object, pass a broad needle through the cornea at its lower margin, and then suddenly turn it on its edge, so as to allow the aqueous humour to run off. The needle must be rapidly withdrawn as soon as the iris approaches the cornea. (Mr. G. Lawson, p. 268.)

Ophthalmia.—*Insufflation of Calomel.*—In the different forms of phlyctenular, or strumous ophthalmia, the insufflation of calomel is often of marked advantage during the presence of the disease, and also in preventing the constant recurrence of the affection. When it causes much irritation the red precipitate ointment must be substituted. (Dr. S. Wells, p. 266.)

PARALYSIS OF THE MUSCLES OF THE EYE.—*Electricity.*—In cases of recent squint depending entirely on peripheral causes, the use of electricity is sometimes productive of most beneficial effects. The continuous current has a deleterious effect on the retina. The extra current of an induction machine must be used; either a magneto-electric or volta-electric apparatus are suitable. (Dr. S. Wells, p. 263.)

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## MIDWIFERY, AND THE DISEASES OF WOMEN AND CHILDREN.

ANÆMIA.—We constantly notice in cases of anæmia in females that, though pallor is marked, evidencing the diminution of red corpuscles, yet there is no diminution in the bulk of the body. This plumpness, however, is frequently false, and is owing to slight infiltration of the tissues with serum. In anæmia there is much more deficiency of the nitrogenized constituents of the body than of the fatty or hydro-carbonaceous, and this is owing to the greater facility of absorption of fatty matters from the intestinal tract. In the treatment of anæmia our aim must be to introduce into the blood (a different thing from getting swallowed) the largest possible amount of—1st. nitrogenous food; 2nd, iron; 3rd, chlorine. To most patients the very sight of food is an abomination. Begin then, not with a regular diet table, but with a cup of milk with some lime-water in it every two hours, and a small quantity of beef-tea in divided doses, and pass very gradually to better articles of diet as the appetite bears or requires them. No form of iron agrees so well as the compound iron mixture of the London Pharmacopœia; it seems as if the carbonate and finely divided oxides were peculiarly easy of solution in the water saturated with salts and carbonic acid, which (and not pure water) we must remember is the solvent to be considered. In cases which improve very slowly, warm hydrochloric acid baths are of great service; the presence of more acid in the system perhaps favours the absorption of more iron. The pil. aloes c. myrrhâ given every night, not as a purgative, but as a clearer of the intestinal, especially of the colonic membrane, is frequently found to be very useful. We must remember that in a state of debility, the digestive mucous membranes are apt to be covered by a glairy mucus, which impedes absorption of nutritive material. It is, indeed, a universal rule that the greater the diminution of life the more secretion from mucous membranes, and the higher the vitality the less secretion is present. (Dr. T. K. Chambers, p. 34.)

*Anæmia and Leucocythæmia.*—One of the most excellent tonics is a combination of hypophosphite of potash with a little sugar or syrup, and a little tincture of gentian. The hypophosphites are almost as useful in anæmia as in phthisis. (Mr. J. Taylor, p. 382.)

Cauliflower Excrescence of the Os Uteri.—Excision of the cervix uteri in cauliflower excrescence of the os uteri is a comparatively safe and harmless operation, when performed by the ecraseur, modified to the circumstances of the operation. A rope made of annealed steel-wire must be made of four or five smaller ropes, each composed of four wires of the size used for sutures. This rope must be made to encircle the cervix, by the aid of two tubes like those of Gooch's double canula. Both ends of the rope are then passed through the eye of the ecraseur, which is pushed up as far as the level of the encircling rope; when this is accomplished, the latter is properly fastened, and the tubes withdrawn. The screw must now be carefully worked. Intra-uterine polypi may be easily removed in the same way. (Dr. J. B. Hicks, p. 311.)

Child-bed Fever.—*Morphia.*—The following method has been pursued with very beneficial results. Give $\frac{1}{8}$th of a grain of morphia two, three, or four times a-day, according to the violence of the abdominal pain, and an hour after each dose a mixture of camphor (℞. Camphor. ʒss; gummi mimos ʒj; aq. chamomill. ʒiij.; liq. ammon. acet., sacch. albi, āā ʒj.) This treatment must be continued until the fever and pain are relieved, which usually occurs very speedily. (Professor Ritgen, p. 303.)

Craniotomy.—*New Instrument.*—A new instrument for perforating the skull in cases of craniotomy is figured at p. 294. The peculiarity consists in the large cone-shaped screw. This may be of use when the cranium is unusually ossified. (Dr. L. D. Harlow, p. 293.)

Dysmenorrhœa.—*Mechanical.*—In cases where the os is hard and densely fibrous, and simple dilatation quite insufficient, the os must be incised all round, and then a small leaden cylindrical plug introduced; this, by means of a dilator shaped like a pair of shoemaker's pliers, may be dilated so as to completely prevent reunion. (Dr. J. Coghlan, p. 275.)

Encysted Tumour of the Labium.—The methods of treatment in ordinary use consist of simple puncture, the seton, injections of iodine, and dissecting out the cyst. A fistulous opening generally follows the use of a seton, and simple puncture fails in producing a permanent cure. The best treatment is to puncture the cyst for the purpose of evacuating its contents,

then to slit it up freely, dissecting away as much of the cyst as can be got hold of, and filling the wound with lint. The cavities heal up by suppurative action. (Mr. Tatum, p. 330.)

I usually dissect out the entire cyst, an operation of some delicacy, as its walls are very thin. (Mr. I. B. Brown, p. 331.)

Fever from Teething.—*Hypophosphites.*—The demand for tribasic phosphate of lime in the construction of the teeth, contributes to the disturbing influence called the fever of dentition; and this disturbance is often found to be most pyrexial in those children who have been ill-fed, or that have been too long suckled, both instances showing a want in the blood of a due proportion of phosphates. In these cases hypophosphite of potash may be given with marked success: in cases marked by sthenic symptoms combined with alkalies, and in cases marked by asthenic symptoms with tonics. It is delightful to witness the effect upon a fractious pseudo-inflammatory child. About eight grains of the pure alkaline hypophosphite must be put in a two ounce mixture, with a little simple syrup. (Mr. J. Taylor, p. 384.)

Hydatids in the Uterus.—You need not fear introducing the hand into the uterus, breaking down the mass of hydatids, and withdrawing the contents. If this is not done hemorrhage may continue to an alarming extent. The uterus will contract and the hemorrhage cease on the withdrawal of the foreign growth. (Mr. T. Tweedale, p. 340.)

Hyperlactation.—*Hypophosphites.*—"There is something remarkable in the permanence of the effect produced by the hypophosphites of potash and soda in prolonged lactation, beyond that experienced in phthisis." It is better to continue the hypophosphite with a little free alkali. (Mr. J. Taylor, p. 380.)

Milk.—*To Arrest Secretion of.*—Apply over the breast by means of a piece of flannel a saturated solution of camphor in glycerine. (Dr. Harriss, p. 296.)

Nævus.—When the nævus is cutaneous the application of a little strong nitric acid or caustic potash generally suffices for the cure. When a deeper eschar is required the potash should be used. The nitric acid may be applied with a small glass rod, and any superfluous liquid absorbed by a piece of blotting paper. (Mr. Le Gros Clark, p. 343.)

*Excision.*—First pass two or more small hare-lip pins beneath the base of the nævus, letting the ends emerge about one-eighth of an inch on each side, beyond the extreme edge of the growth. Now remove the whole growth with the knife,

and bring the cut edges together with figure of 8 ligatures passed over the needles. Excision of these growths is far preferable to the ligature, but for the hemorrhage : by this plan all danger of hemorrhage is avoided. (Mr. J. Gay, p. 346.)

Ovariotomy.—In performing ovariotomy the following points amongst many others are important :—As soon as the tumour is freed from parietal adhesions it should be tapped by a large syphon trochar. As the fluid escapes and the cyst becomes flaccid, it is either to be fixed by a hook and withdrawn, or drawn over the canula and tied over it, to prevent any ovarian fluid from entering the peritoneal cavity. As the cyst escapes, flannels wrung out of water at 90° should be carefully wrapped round it to protect the peritoneal cavity. When a portion of intestine is found to be so firmly adherent that it cannot be separated, the adhering portion of cyst should be cut away, and left attached to the intestine, (the inner secreting membrane being, however, removed.) The pedicle must be compressed by the clamp close to its junction with the cyst before the cyst is cut away. The wound must be closed by hare-lip pins inserted at intervals of an inch, and they must be so managed that, when the opposed surfaces are pressed together, two layers of peritoneum may be in contact with each other on the inner surface of the wound. These two layers adhere together very rapidly, and so prevent morbid secretions from entering the peritoneal cavity. To secure the peduncle permanently, it is often better to transfix it by a ligature, and tying each half separately, to fix the whole to the wound. The clamp may then be removed and the superfluous portions of cyst removed. A hare-lip pin may be used to fix it in position. It is important that the strangulating ligatures be on a level with the skin, and surrounded by dressing which separates the sloughing tissues from the raw surface. (Mr. T. S. Wells, p. 317.)

Ovarian Cysts.—*Trochar Syringe for the Injection of.*—A trochar may be used by which the surgeon may empty large ovarian cysts, inject solution of iodine, and remove it again if necessary, without any risk of admission of air. It is made by Weiss. See woodcut and explanation. (Mr. T. S. Wells, p. 326.)

Painful Menstruation.—*Veratrine.*—In the mechanical form of dysmenorrhœa an ointment, containing one-hundredth part of its weight of veratrine rubbed into the hypogastric region in quantities of half a drachm twice a day, will greatly relieve the pain. (M. Vannaire, p. 278.)

Placenta.—When the head and shoulders of the child have

been expelled, let the left hand take charge of the child, and the right hand grasp the fundus with a firm steady downward moderate pressure. Whilst separating the child let the hand of an assistant be placed in a similar grasping manner. Again place the hand on the uterus and compress alternately the fundus and body of the uterus, and draw slightly on the cord until the placenta is either expelled or comes into the vagina. If relaxation of the uterus occurs, smart friction, "pinching and kneading" of the uterus are required. "I care not to wait for pain, I create it." (Dr. Mc Losky, p. 290.)

Polypus of the Uterus.—It is the best plan to remove polypi from the uterine cavity, and not to wait until they have extended into the vagina. Many deaths arise from delay in their removal. An instrument may be advantageously used consisting of a rod and winch with double canula, made sufficiently strong to carry wire, and bear tension enough to cut through the neck of a polypus at once. It is possible to remove a polypus in a few minutes, whenever the os is sufficiently open to admit the canula. (Dr. W. T. Smith, p. 339.)

Retained Menses from Malformation.—The case here related shows that, by means of a curved trochar, the uterus may be punctured through the rectum, with relief to the sufferings produced by retention of the fluid. The patient will continue to menstruate per rectum. (Mr. I. B. Brown, p. 278.)

Retroversion of the Gravid Uterus.—*Position during Reduction.*—The best position is upon the left side, the pelvis well raised, the shoulders low, and the thighs as much flexed upon the abdomen as possible. If the misplaced organ cannot be restored to its proper position, as a last resource (puncture of the uterus being excepted) the hand may be introduced into the rectum; but in ordinary cases it is sufficient to pass the fore and middle fingers of the right hand into the rectum. Direct the fingers towards the left side of the displaced uterus and of the pelvic cavity; exert a well-sustained upward pressure with them, in the direction of the space between the right sacro-iliac synchondrosis and the pectineal eminence, and the tumour will most likely pass slowly from the true pelvis into the abdomen. (Dr. T. Skinner, p. 281.)

Tuberculosis from Uterine Disease.—An instructive case is recorded which occurred in a French Hospital. The collum uteri was swollen, and the os ulcerated and suppurating freely, while mucus flowed from the cavities of the organ. At last symptoms of phthisis ensued, viz., a distressing cough, hemoptysis, night sweats, and diarrhœa; and there was also a dull percussion sound below the right clavicle. The cervix uteri

was cauterized twice a week, and the abnormal secretion and ulceration were cured by this means. The digestive powers immediately began to improve, the patient gained flesh and strength, the fever disappeared, the percussion sound lost its dulness, and the patient was discharged from the hospital as well as could be expected. (p. 340.)

Turning in Dry Labours.—The difficulty of turning in "dry" labours, (when the waters have been long discharged), is well known to practical accoucheurs. This can be remedied in a great measure by injecting between the pains, from a pint to a quart or more of oil, directing the patient during the process to change her position from back to side, or elbows and knees. The apparatus required is simple enough. An ordinary enema syringe and elastic catheter would do, if connected together by a piece of india-rubber tubing. After this simple operation the contractions of the uterus become less annoying, and the organ itself more pliable to the hand for the operation of turning. (Dr. Langer, p. 292.)

Ulcerations and Congestions of the Cervix Uteri and Vagina.—*Cauterization by Electric Heat.*—There is a peculiar benefit arising out of cauterization by heat, which places it in a different category from all other agencies of this kind, and especially adapts it for obstetric use, and this is, the contractility following its use, and the remarkable modifications of vitality which is caused in the structures treated by its means. Cauterization by electric heat is likely to prove a valuable means of treatment in the following affections: obstinate ulcerations and congestions of the cervix uteri, resisting all other treatment for a long time; vascular growths from the os and canal of the cervix, which often give rise to tremendous hemorrhages; also especially the vascular tumours or caruncles of the female urethra; warty excrescences; and a peculiarly obstinate form of patchy inflammation, apparently of scattered glands on the mucous surface adjoining the meatus, and which frequently give rise to intolerable pain and pruritus. It may also be useful in closing the minute holes left after the operation for recto- and vesico-vaginal fistulæ. The great obstacle to the success of the electric cautery has been the great size, the cost, and the complicated form of the battery required. But now one may be made but little larger than an ordinary glass tumbler. This battery consists of a cylindrical glass jar, with a wide mouth fitted with a cap of gutta percha. Within is a cylindrical roll of amalgamated sheet zinc, a quarter of an inch thick, six inches deep, and about seven in circumference. Within this is a porous earthenware cylinder, containing a roll of plati-

num coil immersed in strong nitric acid. The peculiarity of this battery and the principal secret of its energy, lies in the size and form of the platinum roll. It is formed of a sheet of platinum folded upon itself, so as to present a very large negative surface. From this battery, the current is conveyed to the cauteriser. The cauteriser is of very simple construction. It consists of a straight tube of silver, ten inches in length, containing a piece of stout copper wire clothed with an insulating substance. These formed the two poles of the apparatus, and metallic connexion was made between them at the upper end by a fine platinum wire, while at the lower they were in communication with the battery by two wires secured by a clip. Under the platinum wire was introduced a piece of porcelain, which acted as the cauteriser, being made white hot on the completion of the galvanic circuit. (Mr. R. Ellis, p. 313.)

Uterine Douche.—*New Instrument.*—The apparatus is made entirely of india-rubber. A vessel holding about a gallon of water is placed above the level of the patient, from the bottom of which a pipe conveys the liquid to the uterus. A stopcock is placed in the pipe for the purpose of regulating the flow. No exertion or trouble is required in using this apparatus. It can be procured of Savory & Moore, of New Bond Street. (Dr. G. Hewitt, p. 295.)

Vaginodynia from Muscular and Fascial Contractions.—Cases are sometimes seen which have been mistaken and treated for various alleged affections of the uterus or its appendages. Pains are complained of and referred to the uterus, sacrum, or vagina. The uterus and ovaries on a careful examination are found healthy, but a tense corded transverse band is felt at some part of the vaginal wall, placed more or less deeply beneath the mucous membrane. It is extremely tender to the touch. Painful as these cases are, complete and instantaneous relief is afforded by division or rupture of the tightened contracted band. The best method of doing this is, after giving chloroform, to divide the band by means of a tenotomy knife. These contractions are either the result of chronic spasm of muscle, or of slow contraction of a portion of pelvic fascia from slight inflammatory action. (Dr. J. Y. Simpson, p. 305.)

Vesico-Vaginal Fistula.—*Operation.*—The steps of this operation are as follows: First, Place the patient in the lithotomy position or upon her hands and knees. If in the former, chloroform may be administered. Introduce the bent speculum. Pare the edges of the fistula by knives made expressly for this purpose. Whilst this is being done it is necessary to

hold the edge of the fistulous opening by a pair of forceps or transfix it by a curved needle. By means of a hollow-curved needle introduce wire sutures. These sutures must be passed through all the textures except the mucous lining of the bladder, this must be avoided. Instead of using any of the shots, buttons, and clamps, recommended, it is now found better simply to twist the wire together until the edges are brought accurately and firmly in apposition. Cut off the twisted wire, leaving sufficient to prevent the sutures giving way. Place the patient in bed, on her side with the knees drawn up. Insert and leave in the bladder a male elastic catheter, with bag attached to receive the urine as it drains away. (Mr. I. B. Brown, p. 416.)

## MISCELLANEA.

Alcohol.—It has been lately discovered that when alcohol is absorbed into the blood, it is eliminated unchanged by the lungs and kidneys, and may be obtained by distillation from the urine. It is also found that, whilst in the body it is contained in very different proportions by the different tissues, most of all is contained by the nervous tissue, next by the liver, and next by the blood. The localization of the alcohol in certain organs explains its pathogenic influence over certain diseases of the liver, nervous system, and the kidneys. (MM. Lallemand, Perrin, and Duroy, p. 391.)

Atropia.—*Hypodermic Action.*—The severe nausea and vomiting so frequently resulting from the action of morphia, led to the trial of atropia, the alkaloid of belladonna. It is found that by the hypodermic injection of atropia the removal of pain has been sometimes as speedy, and there has certainly been less disturbance of the abdominal viscera, than when morphia is used. But the disorder of the functions of the brain is more marked—illusions of the senses, delusions of the imagination, and torpor of the muscles, are the characteristic toxical properties of atropia. The best solution of atropia for hypodermic use is made by dissolving one grain of pure atropia in exactly four drachms of distilled water, with the aid of two or three drops of dilute acetic acid. Five drops will be the commencing dose for an adult female, and seven for a man. If injected at bed-time sleep will soon follow, but the patient will awake two or three times in the night, and complain of feeling giddy and thirsty. There is never any approach to actual delirium, and the alleviation of pain *is always very decided*, and more lasting than after the use of morphia. It is of no practical importance to inject directly over the seat of pain, unless that be very superficial. (Mr. J. K. Spender, p. 401.)

*Internal Administration.*—The following is the best form for internal administration. Atropia, 1 grain; distilled water, 5 drachms. Dissolve thoroughly with the aid of a few drops of diluted muriatic acid, and add of rectified spirit sufficient to make 10 drachms. This solution represents all the medicinal virtues of belladonna, it keeps well, and being of uniform strength, is superior to the very uncertain tincture and extract. Of the above solution ten minims is the commencing dose for the adult, given in a little water, on an empty stomach. In epilepsy atropia is sometimes curative, and seldom fails to afford relief. It is often useful in chorea and neuralgia. It often gives great relief in asthma; but its value is most strikingly shown in relieving constipation and in subduing irritability of the urinary organs. It is of much use in dysmenorrhœa. It has been known to act as a parturient, with a promptitude and efficacy superior to ergot of rye. When no spirit is employed in making the solution it may be introduced into the cellular tissue, if its action is required, without delay. (Dr. Fleming, p. 403.)

Chloric Ether and Chloroform Julep.—The following are the formulæ for these two useful preparations from chloroform. *Spiritus Formyli Terchloridi* (commonly called chloric ether): —Chloroform, ℥v; rectified spirit of wine, sp. gr. 388 (L. P.), Oj. Mix. Dose, ℥ss to ℥ij. *Mistura Formyli Terchloridi* (or chloroform julep):—Chloroform, ℥ss; pure water, Oj. Mix thoroughly, with brisk agitation, for a minute or two, in a vessel capable of containing double the quantity. Dose, ℥ss to ℥ij. (Dr. T. Skinner, p. 365.)

Chloroform.—*New Mode of Administering.*—Lay one single layer of a towel or a handkerchief over the patient's nose and mouth taking care not to cover the eyes, and on this single fold pour the chloroform, drop by drop, until complete anæsthesia is produced. This method is perfectly safe, as the vapour is inhaled mixed with a sufficient quantity of air which is easily inspired through a single layer of any ordinary handkerchief. Anæsthesia is more speedily induced, and the quantity of chloroform required is much less. (Dr. J. Y. Simpson, p. 283.)

Codeia.—This is only inferior to morphia for calming pain in that a larger dose of it is required, but it has a marked superiority over morphia in that it never occasions a heavy and agitated sleep, that it does not bring on indigestion, constipation, or vomiting. The last is a very troublesome symptom produced by morphia. Codeia procures a calm and restoring sleep, and must occupy an important place in therapeutics. Those stubborn and harassing coughs of bronchitis,

and particularly of consumptom, those violent pains of rheumatism, gout, and organic affections, of cancer for instance, are forgotten in the midst of the calm and agreeable sleep which codeia produces. (Dr. Aran, p. 412.)

IODIDE OF POTASSIUM.—It is a good plan to add ammonia to all medicines containing iodide of potassium. Five grains of the iodide with half a drachm of sal volatile are equal to ten grains of iodine alone. (Mr. J. Paget, Medical Times and Gazette, Jan. 4, 1862, p. 10.)

IRON-WIRE LIGATURES FOR ARTERIES.—Iron-wire may be made so fine, strong, and flexible as to admit of its being used instead of thread ligatures. It may be drawn into a knot with the greatest facility, and one end being cut off, the other must be left hanging out of the wound. If both ends are left, suppuration and irritation are sometimes excited. In using this wire as ligature care must be taken not to pull it too tight, otherwise the wire will cut itself out. (Mr. T. Nunneley, p. 363.)

NEW SALT OF IRON.—A magnetic phosphate of iron has been prepared by Mr. T. Lightfoot, jun., of Accrington-lane, Sheffield. This salt is very soluble in a solution of citric acid, and does not precipitate with syr. aurantii like most of the iron salts; thus forming one of the most agreeable chalybeates imaginable. It has been extensively prescribed in Lancashire, in albuminuria, diabetes, and various forms of heart disease, in which its action is most striking; while as a tonic in general debility it can scarcely be surpassed. The dose is four or five grains three times a day. It must be kept in solution with citric acid. (Mr. T. L. Gentles, p. 410.)

PODOPHYLLIN.—Podophyllin is a preparation from the root of the *Podophyllum peltatum*, or American May apple. It has been known for a long time in America. In a small dose, half a grain to a grain, it is a remarkable purgative and cholagogue; taken after breakfast one day it acts mildly and naturally by the same time next day. In doses of two grains it produces effects similar to those resulting from ten grains of calomel. Sometimes a single dose evacuates incredible quantities of bile. If, after this has taken place, another dose be given no effects whatever are produced. It may be given made into a small pill with soft extract of hyosciamus, or one-eighth of a grain of extract of belladonna, which prevents its griping. It may also be advantageously combined with compound rhubarb pill, one-sixth to one-fourth of a grain being given at a dose. Podophyllin ranks next to scammony as a purgative, but it is milder in its action. As a cholagogue it stands pre-eminent and alone, far before mercury, or any other drug. (p. 392.)

POISONING BY ACONITE.—*Nux Vomica.*—The actions of aconite and nux vomica are antagonistic. In poisoning by aconite a few drops of tincture of nux vomica is one of the best antidotes which can be given. (Dr. D. D. Hanson, p. 404.)

PRUNUS VIRGINIANA.—This is the bark of the wild American cherry tree. It is considered one of the most valuable of their indigenous remedies. It is (1) powerfully tonic, (2) calmative of nervous irritability, (3) an arterial sedative. A saturated tincture is the best preparation. This, in doses of one drachm, affords relief in a most striking manner in the dyspepsia of highly nervous persons, and in that frequent complaint, "a sensation of sinking and pain at the pit of the stomach." In gastralgia, flatulence, and heartburn, it is beneficial. It may be used in the form of an infusion in cold water. When this is taken freely it sensibly diminishes the action of the heart. No satisfactory analysis has been made of this bark, but it contains amygdalin, and a peculiar principle not yet isolated. This bark is so abundant that it is not likely that any other will be substituted for it in the market. (Lancet, Feb. 8, 1862, p. 159.)

# A Commentary on Midwifery,

AND THE

# DISEASES OF WOMEN AND CHILDREN,

FOR THE LAST HALF-YEAR.

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It becomes a question of some importance in cases of Ovarian Cysts, and in Imperforate Vaginæ with distended uteri, and where relief downwards must be obtained, whether to make the puncture from the rectum or from the vagina. It generally happens that in cases of retained menses, from some congenital defect in the vagina, death follows sooner or later if the opening be made upwards from the vagina, and in such cases we believe that the safer method is to puncture the distended uterus from the rectum. Let us take a case of retention of the menses month after month for a year or two, from want of a vagina or natural outlet. What is the state of this short cavity? Is it lined with a mucous membrane, and so prepared to have communication with the external air, or does it more resemble any other shut sac, like the peritoneal cavity, which cannot bear atmospheric contact? We believe that a womb congenitally closed is not in a fit state to have free and unreserved communication with the external atmosphere; and moreover, we know that in such a case, if an artificial opening were made and kept open, it would not resemble the natural passage of the vagina and cervix uteri, which is in fact nearly a closed canal, except on certain occasions; whereas an artificial opening must always be more continually open, and therefore more completely subject to all the objections which atmospheric influence can produce. A womb which had never communicated externally, on account of some congenital obstruction, will not be lined with healthy mucous membrane, and we ought, therefore, if obliged for some temporary relief to open it, to do so through the rectum, if it so press backwards that we can readily do this. The contents of the uterine cavity will then be emptied into the rectum, and so the cavity will not communicate directly with the air, may gradually become more accustomed to act like a mucous membrane, and after a certain period of tuition, if needs be, an artificial vagina can be made, if there be room and opportunity. The same reasons

will exist, in cases of ovarian cysts, to prefer the rectum to the vagina where an artificial opening downwards is deemed necessary. As a general rule we should say, that all openings into cavities not lined by mucous membrane are pernicious, if kept open, and that an opening into a cavity which is lined by old mucous membrane, such as opening the bladder from the rectum or even in the operation for stone, is not nearly so dangerous. Of course, in all these cases, we have but the choice of evils, and the most experienced practitioners will differ in opinion.

In the American Times for March 9, 1861, Dr. Percy reports a case in which, eight days and a-half after the last intercourse, living Spermatozoa were found in the os uteri. These were examined by the microscope. From this fact it would appear that the ovum may be impregnated in such a case eight or ten days after intercourse, and thus apparently prolong gestation several days; and, secondly, a woman may be impregnated almost at any portion of the period intervening between one menstrual period and another, i.e., if we proved that the ovum maintained its vitality long enough.

Dr. L. D. Harlow, in the American Journal of Medical Sciences for January, describes a new kind of instrument for Craniotomy, which we think much better than the spear-shaped instrument which we use in England. This instrument of Dr. Harlow, named by him the *Diaclast*, is figured at p. 294, and is shaped somewhat like a solid conical corkscrew, or more perhaps like a boy's top made into a screw, with a long handle. It is evident that this will be a most effectual instrument to enter and break up the bones of the skull, and be perfectly safe to the mother.

It is a great mistake in a case of Turning to delay the operation after the amnion has been ruptured. Indeed it is a comparatively easy operation if, at the same time you introduce the fingers to rupture this membrane, you make one operation of it, and continue the advance of the hand and arm till you can lay hold of the foot or leg before the womb has begun to grasp the child tightly. But sometimes you are called to a case where the water has already escaped some time, and the womb is violently contracting on the child, so as to make it difficult to push the hand high enough. Dr. Langer suggests that we syringe a sufficient quantity of oil into the womb by means of a gum catheter and a forcing-pump with a stop-cock; a pint or even a quart of warm oil may be injected with comfort to the patient, and the operation is considerably facilitated. But in such a case half the battle consists in being ready with your remedy, and it is very doubtful whether this recommendation will be followed, on account of the trouble and want of

readiness of the instruments, especially if the case is urgent. Chloroform will have all the good effects of the oil in relaxing the muscular contractions, and with the arm and hand well smeared with lard, we need have little difficulty in accomplishing the operation.

It has been thought by some that if a woman die before labour from syncope, and without any blood escaping outwardly, she cannot have died from Internal Hemorrhage. It is known, however, that a woman may die from this internal hemorrhage without any external manifestation. Dr. J. G. Wilson, of Glasgow, gives us two cases of this description, one of which died, and a post-mortem showed a large collection of blood in a cup-like cavity of the placenta, and confined to this place by the adhesion of the placenta all round its margin to the womb—in fact, the placenta was entirely separated from the womb except at its margin. It was this circumstance which allowed a large collection of blood to take place and none to escape. So that when a woman is seized with this kind of sudden syncope, we must be prepared, with a knowledge of these cases, not only to form a correct diagnosis, but to expedite delivery, both for the sake of mother and child. No medicine, no plug, nor any of the usual remedies to check hemorrhage, will do in these cases. Nothing will secure the woman but the birth of the child and the contraction of the womb. We would therefore recommend the practitioner to dilate the os uteri by the fluid dilator of Dr. Barnes, as described in this volume, which can be done in two hours, and then either to introduce his hand and deliver at once by turning, if the life of the woman be in imminent peril, or, if the urgency of the case be not so great, to rupture the membranes and give a good dose of ergot of rye. Doctors Hardy and McLintock mention two similar cases in their "Report on Midwifery and Puerperal Diseases," and another case is mentioned in the "New Medical and Physical Journal" for 1813, No. 38, p. 535. We have also had one case in our own practice, which proved fatal, the woman only just surviving the birth of the child. This subject of concealed hemorrhage in the womb before the birth of the child has not met with the attention which it deserves, and we would recommend the reader to refer to Dr. Wilson's paper in this volume, and to the papers of Dr. Bell of Glasgow, and Dr. Hicks of Guy's Hospital, as mentioned by Dr. Wilson.

It sometimes happens that Flooding after labour continues more or less, for hours and even days, without any relief from the usual remedies. We may think that we have caused the womb to contract, but it often dilates again in our absence; we may have given all our usual styptics without effect, the

powers of the woman decline every hour, and she is drifting into that state of syncope which will either end fatally, or this syncope itself will be the means of arresting the discharge, and from that period she may slowly rally. We have often attempted artificially to produce the state of nausea somewhat resembling syncope, which in such a case arrests the hemorrhage, by grain doses of ipecacuanha every half-hour or hour, sometimes in less doses, but oftener repeated. By this means we have often saved the loss of a large quantity of blood, and have thus been enabled to make a dose of brandy *tell* better on the circulation when we have been compelled to use it. The principle is that the state of syncope is friendly to the arrest of flooding; but it is a dangerous state when caused by loss of blood in such cases, and if we can imitate it by medicine it is a safer remedy. Ipecacuanha is certainly safer than antimony, and we would strongly recommend it in preference. But in our next case we intend taking a hint from Dr. Brinton's way of arresting hemorrhage from the lungs in the latter stages of phthisis. His plan is to give the tincture of Digitalis, from 30 to 90 minims in the course of the day, divided into four or six doses, till the pulse be reduced to 40, 50, or 60 in the minute. You may continue this drug for several days, or longer, watching its effects on the pulse, and combining an acid with it during the violence of the hemorrhage, and the tincture of the sesquichloride of iron during convalescence. In the large ulcerations of the third stage of phthisis we know what copious bleedings will sometimes come on. In these hemorrhages nothing answers better than Dr. Brinton's treatment by digitalis, and we do not see why we should not transfer the plan to hemorrhages from the womb, when these occur some short time after labour, and continue from hour to hour with the prospect, in a day or so, of having a serious state of prostration and even fatal syncope.

Gallic acid is, of course, a favourite remedy with most practitioners for checking hemorrhage, and so is diluted sulphuric acid, with others. Dr. Earle recommends a combination of the two.

With respect to the Absorption of Pus or other poisonous matter by the veins of the womb, some light has been lately thrown on the subject by Dr. Wilks, in a most able and lengthy report on Pyæmia in Guy's Hospital Reports, vol. vii. It seems that when fibrin is absorbed or taken into a vein it generates fibrinous effusions elsewhere, and when pus is absorbed it causes purulent effusions only: each produces its like, in the same way as cancer-cells set up cancer-cells elsewhere, and a melanosis of the eye propagates its black tumours through the body, and an osteoid tumour gives the starting point for bony

growths throughout the system. Where bone is diseased, it has been long thought that the Haversian canals are the channels through which the pus germs are conveyed into the system. Now these canals are permanently open, and incapable of closing like the ordinary blood-vessels; they are, therefore, peculiarly suited to carry pus germs in diseases of bones. The veins of the womb are likewise sometimes very open, and when the substance of the womb is flabby and powerless, either from flooding or from weakness, we can see how they will be, like the Haversian canal, the ready means of conveying pus germs and other poisons into the circulation, being very near the cava ascendens, and having no valves or other obstructions to their course. When pus or other poisons are taken into the circulation, the first effect is to cause coagulation either in the large vessels or in the capillary system of the viscera. At first, then, we have coagulation, and next suppuration in a part; but this may take place without the original pus itself being conveyed to the viscus, only, we suspect, the germs of pus or some other poison. For example, in the lungs hepatization takes place before pus is formed, so we may have a very minute portion of poison taken up by one of the veins of the womb, and carried with great rapidity to some distant organ, so as to produce the most dangerous effects.

We consider the remark made by Dr. Graily Hewitt, that Puerperal Fever oftener occurs in women who have flooded copiously, to be a true one. In women whose wombs contract well after labour we do not find this disease to occur so often as in weakly flabby uteri. In these the parietes of the womb do not properly close the venous orifices, and the road to the heart is very direct and very near; there are no valvular obstacles to any poisonous matter which may get into them, and hence the fatality is often alarmingly rapid. What is the practical conclusion to be drawn from this remark? Always when you apprehend flooding after labour in weakly flabby subjects, and especially when the uterus contracts feebly before the birth of the child, give a dose of ergot of rye a little before the completion of labour, and as soon as the child is born and before you attend to it, get hold of the uterus during its last contractions and try to make it get rid of the placenta as soon as possible, and, when this is done, dont be satisfied till you have got the fundus well contracted either by the hand firmly clasping it, or by the assistance of cold water and a well-applied bandage.

In the new Lying-in Hospital at Munich there seems to have been numerous cases of Puerperal Fever, and we cannot throw off the impression that the air of an hospital is very dangerous to lying-in women. Some writers assert that the mischief is caused by an epidemic poison in the air of a locality, but others

assert, with more truth, we think, that the cases can be traced to the medical practitioner who is going about from one or more bad surgical cases to his female patients in labour. Dr. Uvedale West mentions a case in his own practice lately, which we think very decidedly confirms this view, and he himself also thinks so. This patient had been attended by a midwife, and was attacked by peritonitis and died. Dr. West had a post-mortem and found a large unilocular cyst of the ovary, the peritoneal covering being black and gangrenous. His attendance in this case and the post-mortem "were followed in his midwifery practice by an unusual proportion of febrile diseases of the puerperal state, caused either by direct contagion or by some epidemic influence." It seems that in such cases the practitioner cannot get rid of the poison which is about his person. Dr. West says that he "felt a wholesome dread of the possible consequences to his lying-in patients of his having conducted this unlucky autopsy," and "took every possible precaution by way of disinfection, such as ablutions, entire change of wearing apparel," and yet out of 48 cases, ten were attacked severely, although none died. M. Semelweiss maintains that the mischief arises from surgeons attending post-mortem cases, but we think that this is not sufficient to account for all the cases, as some arise where the surgeon has not been to a post-mortem examination. We consider that any bad surgical case, especially where there is pus, will convey the poison to the woman. The inner surface of the womb is always more or less affected, and may be looked upon as the starting point of the disease. The mucous membrane chiefly may be affected, pus will be found along the fallopian tube or tubes, and general peritoneal inflammation may ensue; or the inside of the womb is like a large wound covered with pus, which gets into one or more veins, causing pyæmia. In these cases we find coagula and pus in the veins at the insertion of the placenta, and even extending to the vena cava and the heart itself. We would again strongly recommend practitioners in midwifery to attend to two things:—1. Never meddle with a bad surgical case if it can be avoided. 2. Look well to the contraction of the womb after the birth of the child. It will be difficult for the dangerous symptoms of puerperal fever to take place when a womb contracts well after labour, but where it remains flaccid, and the mouths of the veins open, the patient is necessarily more liable to this frightful disease. We think that the subject of contraction of the womb after the birth of the child is too much forgotten or neglected, and we can assure our younger readers that this neglect will be a frightful source of trouble in their puerperal cases. To take pains to ensure the contraction of the womb *after* labour is almost as important as its contraction *before* the labour, whereas the one is always

attended to, but the other often omitted. We have before mentioned the way in which the womb can generally be made to contract, viz., by grasping the fundus as soon as possible after the birth of the child, and even before the whole child has passed out, so as, if possible, to continue or prolong the last and violent efforts of the organ. This is just the time when the contractile power is generally the most effective, and by prolonging the effort but a minute we do more to gain our end than by lengthy efforts afterwards. It has already been noticed that this kind of assistance by the practitioner is the more necessary as these puerperal cases will often occur in women who are weak and flabby, and who are consequently disposed to flood considerably. We should always, in such cases, be prepared with a good dose of ergot of rye, to be given just before the birth of the child, but this ought never to make us careless about grasping and even pulling downwards the flabby fundus uteri, which will be found high up and uncontracted. We have found it most useful to soak a napkin in cold water, fold it up a little and compress this on the fundus, pulling or pressing downwards and backwards towards the pelvic cavity ; the cold napkin of course ought to be changed for others as soon as it loses its coldness. But remember that as soon as the child is born the intestines often fall down over, and in front of the womb, and if you now violently grasp and pull the fundus downwards you are doing so with the folds of the intestines under your hand. This would therefore be highly improper, and even dangerous to the woman. To avoid this, slip your fingers and bare hand upwards from the pubes along the surface of the womb so as to be sure that you have not got any of these intestinal folds under your hand ; you may now grasp the womb confidently and with almost any degree of force.

In Leibig's Letters on Chemistry, p. 229, we have the following remarks on Cadaveric Poison :—"It is a fact that dead bodies in dissecting rooms frequently pass into a state of decomposition which is communicated to the blood in the living body. The slightest cuts with the scalpels used in dissecting often cause a very dangerous and even fatal disease. The observation of Majendie that putrid blood, brain, bile, or pus, when laid on fresh wounds, produce in animals vomiting, languor, and death, after a shorter or longer interval, has not yet been contradicted." This remark has long been ascertained to be true by all medical practitioners, but it has been practically and curiously confirmed in Vienna lately in the Lying-in Hospital, where, as far as we can learn, the physicians and not the surgeons, as in many other metropolitan hospitals, attend women in labour, thus reversing the practice which is common in the large provincial towns in England. In the Vienna Lying-in Hospital

in 1846, the labours were attended by both physicians and midwives, but the fatality of the physicians' cases was four times greater than that of the midwives. This was ascertained to be owing to both Dr. Semmelweiss and the students attending post-mortem examinations, "that the cadaverous smell on their hands, in spite of repeated washings, did not disappear till after a considerable time, and that the pupils not unfrequently proceeded to the examination of women in labour immediately after dissecting a dead body." Dr. Semmelweiss then adopted a rule that every one should wash his hands in chlorine water before examining a woman, and immediately after this the physicians had no more fatal cases than the midwives. These facts are not sufficiently recognised by medical men, or at any rate, although well known they are not acted upon. What can be more dangerous than for a surgeon to go from a case of strangulated hernia, where the bowel has been gangrenous for a considerable period, to a woman in labour, or from any other kind of bad surgical case where purulent and gangrenous discharge exists? We maintain that operating surgeons ought not to attend labours at all, but that these ought to be attended by physicians and general practitioners, who seldom or never meddle with these bad surgical cases. In London we believe that it has long been the custom for operating surgeons to avoid the practice of midwifery, whilst most of the hospitals have physicians who devote their attention to this department of medicine. Further, we disapprove of the practice now becoming too common, of the physicians themselves operating in such cases as ovariotomy, &c. Let the departments of surgery and midwifery be more completely divided, and we shall hear of but very few cases o puerperal fever.

A short account of the Treatment of Puerperal Fever at Giessen, by Professor Von Ritgen, reminds us how erroneously this dreadful malady is sometimes treated in this country. Dr. Von Ritgen's practice consisted in giving morphia, ten grain doses of camphor, and one grain doses of quinine as will be seen by referring to the article at page 303. In these poison cases we ought to remember that fever, and even inflammation, are favourable symptoms. Those cases are the most rapid and dangerous where the patients are struck down at once by the force and violence of the poison without having time given to the system to *get up* a fever or inflammation. It may seem paradoxical, but it is acknowledged by our best writers, that the fever and inflammation are *conservative processes* to throw off the poison through one structure or another. Those cases do the best where fever and inflammation are set up, and therefore we should be extremely cautious, even when those symptoms exist, how we attempt to check them by leeches, antimonials,

low diet, or any other depleting means. In most of those so-called inflammations and fevers it is the poor and rapid pulse which alarms us, and not the full and bounding one. Let us, therefore, in our puerperal fevers, keep the patient *well up* from the first, notwithstanding what might appear to be fever and inflammation. And we would here recommend to our junior brethren in their cases of labour not to be afraid of giving the patient a mutton chop forty-eight hours after labour instead of keeping her on low diet for nearly a week.

Let us be careful how we manage such a case as the following:—A woman is seven or eight months advanced in pregnancy, she looks *puffy* about the hands and face; we examine the urine and find it albuminous; in due time she is attacked by convulsions and coma. What are you to do? Bring on labour with as much speed as you can. This generally occupies twelve or twenty-four hours and often some days. One of the best plans is that lately adopted by Dr. Barnes. We assume that the os uteri is undilated and the membranes unbroken. First, puncture the membranes with a knitting needle, or small male catheter, and then proceed to dilate, first, the vagina and then the os uteri, by means of a caoutchouc dilator distended with water. You can introduce this into the os uteri, and gradually dilate for half-an-hour or an hour at a time. You imitate with tolerable accuracy the method which nature herself adopts. Labour pains are gradually brought on and the dilatation of the os is completed in two, three, or four hours, so as to enable you to deliver by turning, or to leave the process to nature when she is doing her work well enough. To accomplish artificial delivery in two hours in a case of need, instead of having to wait twelve or twenty-four, is certainly an improvement in this kind of case where the life of mother and child depend on expedition.

Ovariotomy continues to be a common operation. In the Lancet for Nov. 30, 1861, p. 519, are reported thirteen cases, of which nine were successful and four fatal. Although every case differs a little from the rest, yet there is a general resemblance both in the cases and in the management of them. Adhesions more or less extensive were present in four of the successful cases, and in all the unsuccessful ones. Mr. Brown still prefers to secure the peduncle at the abdominal wound by the *clamp*—this clamp being an ordinary pair of carpenter's callipers. The advantage of this clamp is that it can be removed in a few days, and the peduncle gradually retracts within the abdominal cavity without any ligature having been used. On the other hand, it is said to put the parts too much on the stretch causing vomiting, retching, or straining. On an average two out of every three patients may be expected to recover, especially if the air

of the apartment be kept good, and if small and separate wards be reserved for these cases. These kinds of operations, as well as all other capital surgical cases, do not bear congregating; they do much better when kept apart, and even alone. This remark seems to apply especially to all surgical cases in which wounds of the peritoneum are involved. In the London Surgical Home, under Mr. Brown's care chiefly, the success was thought to be increased by the preparatory treatment, which consisted of warm baths twice-a-week for three weeks prior to the operation, and the administration of a combination of the tincture of arnica and muriated tincture of iron, with attention to the general health. In a case under the care of Mr. Hutchinson the tumour had to be tapped in three places owing to its multilocular character, and was gently drawn out of the wound as it emptied itself.

We are glad to see that the use of silver wire is increasing, in those cases where ligatures of deep parts, and in the cavity of the abdomen, are required. In our last Commentary we alluded to cases of lead bullets remaining for years in internal parts, and to a case where the veins of the spermatic cord were tied by a metallic ligature and the parts healed well with the ligature inside. These are perhaps different cases from those in which the ovarian peduncle or adhesions are tied in the peritoneal cavity, but still they confirm the principle that metallic ligatures cause comparatively but little if any suppurative inflammation. Let us be careful, when we strangle an ovarian peduncle, or a peritoneal adhesion, to do so with only just sufficient force to check hemorrhage, but not completely to devitalize the strangled portion. To strangle the part so completely as this would necessarily cause it to slough, and it would matter but little in such a case whether the slough were caused by wire or thread. This distinction is not sufficiently attended to. A wire ligature drawn so gently round an ovarian peduncle, or other internal bleeding part, as not to devitalize it, but only just sufficient to arrest hemorrhage, may prove a useful suggestion.

We ought to take particular notice of the experience gained by the leading operators on ovarian cysts. These gentlemen are candid in acknowledging where they fail as well as where they succeed. It is in this way that we shall arrive at great success in all capital operations. Mr. Spencer Wells has laid down some truly practical rules, many of which he has learned from his own experience. Some of these are as follow :—It is seldom right to recommend ovariotomy where only a single cyst exists, until simple tapping with iodine injection have both failed. In compound cysts, or semi-solid or solid tumours, where the life is severely threatened, it should be done before the general health gives way. As soon as the tumour is freed from

peritoneal adhesions, it should be tapped by a large syphon trochar. As the fluid escapes and the cyst becomes flaccid, it is either to be fixed by a hook and withdrawn, or drawn over the canula and tied over it, to prevent any ovarian fluid from entering the peritoneal cavity. As the cyst escapes, flannels wrung out of water at 96° are to be carefully wrapped round it to protect the peritoneal cavity. As secondary cysts are drawn to the opening, they are to be emptied, either by the trochar being passed on through the canula which is still tied within the first empty cyst; or by opening this cyst, passing one hand within it, and breaking down secondary cysts, while the other hand withdraws the tumour as it is emptied. When there is a solid or semi-solid mass, so large that it will not pass easily through the opening, this must be carefully enlarged to the necessary extent. If, as the tumour is withdrawn, omentum, mesentery, or intestine, are seen to be adherent to it, the adhesions must be carefully broken down with the fingers, or divided with the scalpel or scissors. When intestine is so firmly adherent that it cannot be safely separated, the adhering portion of cyst should be cut away, leaving it attached to the intestine, but removing the inner secreting lining membrane of the cyst. Any portion of omentum separated, should be carefully held to see that no bleeding vessel is returned. Any portion which appears to be much altered from the natural condition, or torn in the process of separation, should be cut away; and any bleeding vessel should be stopped by torsion, or by ligature. If by ligature, the ends should be brought out through part of the wound. The ligature should not include any portion of omentum—simply the bleeding vessels. When the whole of the tumour has been withdrawn, it will be found to be attached to one side of the uterus by a pedicle which varies very much in length and breadth, and always contains large blood-vessels. This pedicle is first compressed by the chain of an *écraseur*, or by a clamp, close to the junction of the pedicle and cyst. The tumour may then be cut away, great care being taken so to arrange the flannels that no ovarian fluid can enter the peritoneal cavity. The lips of the wound are then held apart, and the opposite ovary is to be examined. If diseased, it must be withdrawn, its pedicle secured, and the diseased organ cut away. If healthy, it is left undisturbed. A careful examination is then made, to see if there be any bleeding vessel at the spots where adhesions have been separated. Any such vessel may be secured by torsion, or by the pressure of a needle passed across it. Any blood or ovarian fluid in the abdomen or pelvis must be carefully removed by soft sponges

wrung out of water at 96°. The upper part of the wound is now to be closed by passing gilded harelip pins through the whole thickness of the abdominal wall, at intervals of an inch. Each pin should perforate the skin about an inch, and the peritoneum about half-an-inch, from the incision on either side; so that when the two opposed surfaces are pressed together upon the pin, two layers of peritoneum are in contact with each other. These two layers adhere together very rapidly; prevent pus or other secretions of the womb from entering the peritoneal cavity; prevent adhesion of omentum or intestine to any part of the inner aspect of the wound not covered by peritoneum; and secure such firm union that a ventral hernia cannot occur after recovery. The peduncle is next to be secured permanently. When the clamp does not drag on it too much, it may be left lying across the wound; but it will often be better to secure the pedicle permanently by ligature, and remove the clamp which had been used to secure it temporarily. Close below the clamp, the peduncle is transfixed by a needle which carries strong twine; and each ligature is so tied as to include a portion of peduncle of about a finger's breadth. One general ligature is then tied tightly around the whole as a security against bleeding from any vessel which may have been punctured. The smaller the portion included in each ligature, and the tighter it is tied, the more rapid is the subsequent process of separation. When the ligatures have been securely applied, the clamp is removed, and any superfluous portion of cyst is cut away; but care must be taken to leave enough beyond the ligature to prevent any danger of this slipping off. When the peduncle is so long that the stump (or portion strangulated by the ligature) can be fixed outside the abdominal cavity, it is to be brought out at the lower part of the wound, and fixed there by a harelip pin, which is to be passed through it as well as through both edges of the wound. It is important that the ligatures should be on a level with the skin, and that the stump should be surrounded by dressing which separates the sloughing tissue from the raw surface. When the ligatures are fixed at the level of the peritoneum, raw surfaces surround the sloughing stump, and a sloughing condition of the wound, or putrid infection of the whole system, may possibly result. When the peduncle is so short that the stump cannot be brought to the surface without great traction upon the uterus, the common practice has been to bring the ligature through the wound, and fix the free ends securely outside. In one case, they were carried through the inguinal canal beside the round ligament, and the abdominal wound was closed. In another, they were cut off short and left, the wound

also being closed. It remains for further experience to determine which of these plans is to be preferred; or if only the vessels should be tied, instead of the whole thickness of the pedicle; or if acupressure can be applied successfully; or if it would be safer to trust to the *écraseur*.

In cases of ovariotomy the peduncle is often brought to the external wound and held there by a clamp, thus putting the parts on the stretch. Dr. Robert Tanner, of Ledbury, asks why we do not make use of the hot iron in the way that sow-gelders do on inferior animals. These men make a small wound in the abdomen, draw the ovaries through it, and taking hold of the peduncles by a clamp they *sear off* the organs with a hot iron made rather sharp; they then thoroughly sear the maternal portion, and loosen the hold of the clamp a little to see if any oozing take place, if so, they sear a little more till all oozing cease, and then return the parts into the abdomen, closing the abdominal wound by a stitch. If this process would answer in the human female, it might be useful to apply Mr. Ellis's electric cautery, which we have no doubt could be done by a circular wire grasping the peduncle, almost like the ecraseur: but there would be this objection which we have not seen answered, viz., the production of a slough, more or less, which would cause pus to form on its separation, and we know that pus collected internally, in however small a quantity, is highly objectionable. It would be this formation of a slough which would be dangerous when the peduncle had been tied by a silver wire ligature, otherwise we think this kind of ligature would be an improvement, and we still think that if the parts could be so gently strangled as not to completely devitalize them and yet to check hemorrhage, the wire ligature might be safely employed.

We have two or three valuable hints to give about the operation of Vesico-vaginal Fistula. The patient is placed in the usual position as for lithotomy, and the parts exposed to view. It is better to hold the fistula by a curved needle instead of a pair of forceps; the needle not only serves this purpose but can be armed with the wire ligature to be used afterwards. Both this and the other needles, of which the operator ought to have a great variety ready, should be carefully passed through the coats of the vagina, but *only through the muscular tunic* of the bladder. If you thrust them carelessly through the mucous coat as well, you will probably cause the whole operation to fail, as you lay the groundwork of fresh fistulæ. Formerly when the wire had been passed it was secured by shots, but Mr. Brown thinks that to twist the wire round and round with the fingers, or, if too deep to reach, by Weiss's self-holding forceps, is a better plan. We cannot impress it too strongly on young operative

surgeons to avoid transfixing the mucous membrane of the bladder, and to bring into juxta-position the corresponding tissues. In all these operations, and similar ones, where adhesion of *pared surfaces* is required, we should bear the same principle in mind, viz., to apply the edge of a serous membrane to a serous membrane and not to a mucous one, and a muscular texture to a muscular texture and not to a mucous or serous one. This seems but a little matter to attend to, but success will often accompany attention to many little things, instead of to one more important.

The young practitioner will not unfrequently meet with a Cyst on the inside of one Labium pudendi. He may mistake it for an abscess, or even for a hernia. He will soon diagnose it by its long existence, its moveable and cystic feel, absence of impulse on coughing, and by the absence of the soreness of purulent collection. He will naturally open it and there will escape a thick glairy liquid or a darker chocolate-coloured fluid. We think that the treatment of these cysts may be considerably simplified. In London they are generally treated, we believe, by simple puncture, the seton, injection of iodine, and dissecting out. Mr. Baker Brown dissects out more or less of the of the cyst, and Dr. Oldham often employs the seton in Guy's Hospital. We think that we possess a still more ready method of treating them, and one almost invariably successful. Put a bit of nitrate of silver, the size of a swan shot, or smaller, or larger, on a bit of paper near a gas light; take your silver probe, heat it in the gas light, and immediately plunge it into or upon the bit of nitrate of silver; it soon cools and adheres well to the probe. You now slit open the cyst, empty it of its contents, and immediately wipe out the whole interior with the charged probe, and apply some dry lint or cotton wool; adhesive inflammation is soon set up and the cyst disappears. We can carry out the same simple treatment in all small cysts on the eyelids, and in strumous cervical glands, which can thus be cured without leaving the ugly scars which are so often seen. In the same way, but only introducing the probe, more subcutaneously, as in subcutaneous nævi, we can radically cure enlarged bursæ. In these cases, however, the bistoury should be pushed through the sound skin at some distance from the bursa, so as to evacuate its glairy contents, and the charged probe should then be carried along the track which the bistoury has made, and the cavity of the bursa *wiped about* with the nitrate of silver.

It is almost gratifying to find that eminent men are sometimes wrong in their opinions, and it is highly creditable to them to acknowledge it. Our good opinion of them is not diminished by their failures because every candid man must himself acknowledge that he too often fails. An experienced surgeon diagnoses a

large Fibrous Tumour of the ovary, perfectly moveable and free from adhesions. This tumour being perfectly moveable, beginning from one side, and growing rapidly, was at once suspected to be ovarian, and capable of being removed by operation. We confess that we should easily have distinguished it from an ovarian tumour free from adhesions, by the following simple method. We should have placed the finger of the left hand on the os or cervix uteri, and with the other hand we should have pressed the tumour downwards towards the finger so placed. We should at once have felt that the body intervening between our two hands was a solid one, and that it was the uterus itself or some tumour intimately connected with it. No free ovarian tumour, without adhesions, would have the same feeling of a solid body between our two hands as would a solid and large uterus. It is not our purpose, however, to criticise, but to draw a lesson. Suppose that you make an exploratory puncture in such a case, and find a tumour of the womb instead of an ovarian body, what will you do next? Will you proceed to extirpate, or close the wound and acknowledge your mistake? We should not hesitate to close the wound at once and proceed no further. It is wonderful what ill-usage the womb will bear *from within*, and how little *from without* will prove fatal. You may excise, scrape, enucleate, and almost tear tumours from within the womb, taking care that you interfere as little as possible with its structure and never go through its peritoneal covering, and your patient may do well—but if you do this from the abdominal cavity you necessarily do it through the peritoneum, and your case will very probably be fatal.

At page 326 will be found a description of a Syringe used by Mr. Spencer Wells for Injecting Iodine into Ovarian Cysts, without the risk of admitting air. In some of the early cases too much iodine and spirit of wine were injected. It is now found that a scruple of iodine and half a drachm of iodide of potassium to the ounce of water, is better than a large quantity dissolved in alcohol. From one to two ounces of this solution may be left in a large cyst, but eight or ten ounces may be at first injected, so that all parts of the cavity may be washed with it, and the small quantity of one or two ounces left in will do more good than harm.

At one of the meetings of the London Obstetrical Society, Dr. Tyler Smith showed an instrument, by means of which Polypi could be readily taken from the uterus. It consisted of a rod and winch with double canula, made sufficiently strong to carry wire, and bear tension enough to cut through the neck of a polypus at once. This no doubt is a very good way, but we think that our own plan is better, and much more simple. You sometimes meet with a polypus with a very thick peduncle, and

with other kinds of growths from the inside of the womb, which it would be difficult to strangle. We would recommend that the two first fingers of the left hand be pushed through the os uteri, and along the polypus or tumour to its origin; the two fingers by being a little separated and hooked will then be able, in most cases, to bring the peduncle considerably downwards, and we need not be afraid of using force almost enough to cause a degree of inversion of the womb. Now introduce a pair of long-handled but very small scissors, the points being curved almost at a *right angle*, so as to cut almost horizontally. These points may be made to cut almost downwards and inwards, by regulating the angle, and having them either sharp or blunt according to circumstances. A long small-pointed knife, with the end bent in a similar way, may be preferred by some. The common curved scissors are very ill adapted to these cases, unless we can *invert* the womb and bring the growth down through the os uteri. Remember that when you have to introduce a pair of curved scissors through the os uteri, you will by no means cut horizontally but almost directly upwards, but when the scissors are bent at the angle we have suggested, a very limited range will be enough to cut through the largest peduncle, by taking plenty of time to *nibble* at it with the points of the instrument; and this *nibbling* process is sometimes much better than a more expeditious one, and more resembles the ecraseur and even the ligature, but we think it much more easily done, and is equally efficacious. The operator will be able to succeed in all or most cases when he can get his two fingers through the os uteri. Dr. J. B. Hicks has invented an instrument to remove these polypi, which seems likely to be successful where the peduncle can be secured. It consists in the adaptation of rope made of annealed steel-wire to the shaft of a screw-écraseur, whereby the flexibility of the rope is combined with nearly the strength of the chain. This annealed steel-wire has the greatest strength and flexibility. We have no doubt that such an instrument will be found very useful where the neck of the polypus can be properly secured, but not in other cases of tumours where there is hardly any peduncle at all, and where the ligature could not be properly secured. In these cases we think that the angular scissors or bistoury which we have suggested would answer the purpose better. In some malignant diseases about the os uteri it is not well to drag down the womb at all, in such cases we think Dr. Hicks's instrument will be very valuable. The part can be separated by pulling it down or displacing it, and we shall not have the hemorrhage which we might have by using the knife or scissors. The use of powerful styptics in some of these malignant cell-growths, is sometimes remarkable. The vitality of these cells is feeble,

and their contents can be coagulated through their walls. Tannic acid is one of the best stypties for this purpose. It may be applied to the part in powder, or you may mix the tannic acid in a saturated solution of alum. Two drachms of tannic acid to half a pint of a saturated solution of alum, applied every day will reduce the more tender parts, but will not have the same effect on the parts which approach healthy tissue in character. Therefore it has the best effect on the external portions, and less effect on the deeper parts. Sometimes a lotion only half this strength is sufficient. The tannin when used thus, being insoluble, remains on the parts a considerable time. We think the use of this styptic might be extended to other growths of feeble vitality, and especially to fungoid bodies low down in the rectum.

Increased experience only makes Dr. Coghlan value still more his knife for dividing the cervix uteri in cases of Dysmenorrhœa. There is no doubt that when the cervical canal is very contracted and the discharge thick, the function of menstruation partakes slightly of the process and pain of abortion. In such cases to dilate the canal is attended with great benefit. We may do this by gradual dilatation by means of sponge-tents, by bougies somewhat resembling Mr. Wakley's instruments for dilating strictures of the male urethra, or by the more rapid process of incision. Dr. Simpson's instrument we have referred to before. This instrument is passed up the cervical canal and *cuts as it is withdrawn*, and is somewhat like the common hernia knife. Dr. Coghlan's instrument *cuts as it proceeds upwards;* it divides the canal on *both* sides, while Dr. Simpson's only divides *one* side. However narrow the canal may be, it divides and enlarges it as it ascends. We confess that we see but few advantages in these things over the simple knife of Dr. Simpson, which is easily introduced without the aid of the speculum and cuts as it is withdrawn. Dr. Coghlan's instrument is no doubt a very neat and useful one,, but nothing can exceed the ease and simplicity of Dr. Simpson's knife. When the canal has been divided, you must not forget to introduce a metallic plug, so that the parts may heal while in a state of dilatation. The instrument devised for this purpose by Dr. Coghlan is figured at p. 277, where the reader will find a description of its use. In many cases we think this dilator may be very useful without any incision at all, and probably will be preferred by most practitioners to the cutting instrument in all cases.

It is sometimes curious to trace the connection between one disease and another. In a disease like Phthisis, we all know how rapidly it becomes confirmed when the assimilating organs become more than usually at fault, but we have not paid sufficient attention to the fact, that in women the womb may be

the real cause which first throws the digestive processes wrong, and that this is rapidly followed by confirmed phthisis. In women, therefore, if the digestive powers are impaired, examine the womb and you may find ulceration of the os or cervix, or a state of congestion, or even denudation of the internal mucous membrane: and by remedying these things, you may restore the tone of the digestive powers, produce a healthy manufacture of blood, and thereby avert the tubercular deposits which might have soon appeared.

To check the too copious secretion of Milk, belladonna is certainly useful: as will be seen by referring to our former volumes. Camphor mixed with glycerine is found by Dr. Harriss to be preferable. He uses a saturated solution, gently applied over the breast with a flannel, several times a day. We have had no experience of this remedy.

In viewing the Diseases of Children generally, we must warn our younger friends not to look for those special and limited diseases which they will find more particularly developed as age advances. For example in the adult and more aged patient you may have alone almost any one disease, such as pneumonia, bronchitis, inflammation, or congestion, or other diseases of particular and limited portions of the brain; but in children the whole system becomes more rapidly and generally affected. In them we have but few chronic and limited diseases, but more acute and diffused ones. In them the arterial system preponderates over the venous, and this is gradually reversed as age advances. This remark is not only applicable to internal diseases, but also to affections of joints, in which all the structures are more rapidly implicated than in later years: but although these little patients are much more liable to acute and dangerous diseases, they have also a greater power of repair, and when a disease or deformity does become chronic during the growth of the body, it is pleasing and astonishing to see what struggles the system makes to regain its original type and mould.

We have often noticed how variable is the pupil in diseases of the brain in children. As a rule, in effusions on or in the brain, the pupil will be dilated; but in some cases this will vary, owing probably to the disease implicating or not the structures adjoining the optic nerves. In some forms of apoplexy the pupils are actually contracted, as for example when there is fluid in the ventricles which descends to the base of the brain, and where there is a clot in the pons varolii. Dr. Wilks has noticed that even the position of a patient will alter the pupil. In a case of ventricular effusion with softening of the brain in an old man, when he laid on his right side the right pupil was dilated, and when on his left side it was the left pupil which

dilated, showing that simple gravitation of the fluid was sufficient to produce these effects. At the commencement, therefore, of diseases of the brain in children, dont depend too much on the pupils. You may have disease of the periphery or of the base, with contracted pupils at first; but let the disease advance, and the pupils will at last give you a more certain diagnosis.

The treatment of Nævi in children often requires great care, especially when existing about the eye, or on the face or scalp. Sufficient has been written on this subject to make us all learned enough, but have we practically paid attention to what we have read. The cutaneous nævus, when very superficial, may be treated by applying a little nitric acid or caustic potash, taking care to confine the application to the part diseased, and not to extend it more than one line beyond the affected part; using a paint brush or glass rod for the nitric acid, and having a bit of blotting paper ready to absorb any superfluous quantity. In using the potassa fusa to a child about the face, it is often difficult to make the little patient keep quiet. For this reason we generally put a small bit of the caustic on a bit of adhesive plaister, and apply it with accuracy to the diseased spot; the plaister keeps the caustic exactly where we require it, there is no rubbing required, the movements of the child cannot displace it, and in a few minutes, more or less according to the depth of the nævus, we take off the plaister. If we wish to be still more particular, we make a little hole in a bit of plaister, the exact size of the nævus, and put this plaister over the part so that we can see the nævus through the hole; on another bit of plaister we then stick the piece of potassa fusa and apply it to the hole, a little oil having previously been carefully wiped round the nævus on the sound skin, so as to prevent the caustic spreading under the plaister. But we are inclined to think that after all the best application is the fine point of a red-hot wire; it is not more painful then the caustic, and its destructive effects are carefully confined to the part destroyed, without endangering the surrounding skin. This is especially important about the eyelids and face, in little children. If the nævus be in the subcutaneous structure, neither the nitric acid, the potassa fusa, nor the actual cautery will do. You must adopt one of the following methods. Melt a little nitrate of silver in a silver teaspoon, dip a silver probe in it, so to charge the end of it to the size of a small or large shot, take a fine bistoury and introduce the point through the sound skin at a very little distance from the nævus, and push it into the diseased structure to break it up. Now withdraw the bistoury and immediately push the charged probe through the wound into the nævus and work it about well, then withdraw it, and cover the part with a little lint or plaister. The cure will be almost certain. We have adopted this same

plan with a very fine probe, charged with a minute quantity of nitrate of silver, in those small cysts in the eyelids which have generally required excision, only that we push the bistoury directly into the cyst and do the same with the charged probe, and generally from the inside of the eyelid. Cysts of a larger size are not uncommon on the inside of the female labia pudendi which may readily be cured by this simple plan. The ligature is safe and efficacious when we do not care much about taking up a little skin, as on the scalp. Perhaps the best way is to push one or two needles through the structure and strangle it by twisting the ligature round its base under the pins, somewhat in the way of twisting the thread round the pins in cases of hare-lip operations. We have sometimes been struck by the way in which nævi of the scalp in children will cure themselves; we attribute this to the probability of these structures being sometimes fed by vessels passing from the internal to the external surface of the bones, and, as ossification advanced in the child, becoming strangled. Hence in young children we are never in a hurry to destroy nævi on the scalp till ossification of the bones of the head has been completed. Extirpation by excision is not often recommended, except when the nævus exists in muscular tissue. Mr. Gay's method of extirpation, however, is one of the best which we have seen. He passes a hare-lip needle through the skin, below the base of the nævus, so that the ends emerge about one-eighth of an inch on each side beyond the extreme edge of the growth. He then removes the whole of the nævus by incision close to the margin, and instantly brings the sides of the wound together by means of a figure of 8 ligature round the needle, as in hare-lip cases. If one needle be not sufficient more can be introduced according to the size of the nævus and degree of hemorrhage. This simple operation will in many cases do away with the objections to excision on the score of hemorrhage which has been the great fear in these cases. One pin will obviously be insufficient when the nævus is large or long, just as in hare-lip one or more pins are required according to the length of the wound.

Mr. Ellis's Electric Cautery, which has been greatly improved lately, will be of great use in several obstetric cases, especially in those troublesome nævi or vascular tumours or caruncles which we so often find at and about the orifice of the female urethra. We have often failed in curing these little red bodies by the usual caustics, and generally now at once apply the point of a red-hot skewer, the other end being fitted into a bit of cork—a homely contrivance, certainly, but a very efficacious one, and which can be extemporised in the country, when you are not aware of the nature of the case to which you may be called. When you are consulted at home, however, you can

now always have one of Mr. Ellis's instruments. When you apply red or white heat to one of these caruncles, you not only destroy it, as you would do with potassa fusa, but you induce a certain degree of contraction round it, of the contiguous structure, the same as in a burn of the skin. This, no doubt, is a valuable aid in preventing the return of the disease. You can also confine the destructive power to the exact spot which you wish to destroy. This cannot always be done with the other caustics, which spread and generally involve a portion of sound mucous and sub-mucous tissue which is not desirable. In all these cases use a *white* heat rather than a *red* one. The white heat causes comparatively little pain; the red heat is both more painful and less effectual, and it is perhaps from using only a red heat that the practitioner often fails altogether. When you use the common wire or skewer, or any other metallic body heated in the ordinary way to a white heat, it often becomes only a red heat before you can apply it to the caruncle, and even then soon cools down considerably. But the heat of this electric cautery can not only be applied *white*, but kept so. This is a considerable advantage: and its use may be extended to the os uteri and rectum in some cases where we have hitherto used other caustics. In cases of small nævi about the eyelids in children, the only objection might be that more contraction might follow a small burn than by the usual methods of destruction, but we should not be much afraid of this if we confined the cautery to the nævus itself, and did not implicate any of the surrounding skin.

Dr. Simpson's present mode of exhibiting Chloroform, is, to spread a single layer of handkerchief over the face and let the chloroform fall on it drop by drop. Its effects are more rapid with a less quantity. You may thus keep a patient affected for many hours with a very small quantity. It strikes us that in a case of labour this would not always be easily done, although much more easily applied than where a larger quantity is used and the handkerchief repeatedly taken off and re-applied. Our own plan is quite as simple and perhaps sufficiently efficacious in a tedious labour. Put a small quantity of chloroform in a tea-cup, apply the edge to the under surface of the lower lip, and now gradually approximate the cup to the mouth and nose, leaving more or less space for the mixture of atmospheric air. The nurse can manage this while you are otherwise engaged. You use very little chloroform, you can prolong its use for hours, the nurse can do it as well as yourself, and the effect is sufficiently good.

It is computed by Stockhardt that twenty or thirty ounces of phosphorus exist in the bones and other structures of the human body, and that it is the "cementing principle and bond of union

to the other components of texture or tissue." Hence when displaced we see rapid disorganisations. For example, when a child is deprived of its phosphate of lime by eating a little alum in its bread, thus forming an insoluble phosphate of alumina, its bones have to depend chiefly on lime and gelatine, and therefore soften, constituting rickets. In children, therefore we shall often impart vigour and increased health by giving hypophosphite of potash or soda. In women, too, who sometimes are attacked by a similar softening of the bones, implicating especially the pelvis, we may find a valuable remedy in the preparations of phosphorus.

The attacks of Epilepsy in the female are often quite unaccountable, indeed, the same may be said of this disease generally. It has for some time, however, been suspected that these attacks have much to do with some local cause, such as affections of bones or membranes, or the ovaries in the female, often, indeed, with some remote syphilitic affection, inherited or not. At any rate it is interesting to see the effects of the iodide or bromide of potassium in relieving, if not curing, the attacks. Dr. Wilks mentions some interesting cases in which he has used, with much benefit, the bromide of potassium in five-grain doses three times a day. The bromide is thought to have some influence over the ovary, and has been also used in these epileptic cases by Sir Charles Locock with some success.

# PRACTICAL MEDICINE.

## DISEASES AFFECTING THE SYSTEM GENERALLY.

### ART. 1.—DOES INTESTINAL FEVER EVER ARISE SPONTANEOUSLY?

By Dr. WILLIAM BUDD, Clifton, Senior Physician to the Bristol Royal Infirmary.

[Cases of small-pox are constantly arising, which, like cases of fever, cannot be traced to contagion. Yet no one supposes that small-pox, whatever its first origin, ever now arises *de novo*. If we are to believe in the spontaneous origin of typhoid fever, we must hold the same of small-pox also. But it is obvious that by the same rule we must believe in the spontaneous origin of plants and animals.]

Spontaneous generation is a pure hypothesis, but of all hypotheses the most gratuitous. And if, in reply to this, it were argued that it is much easier to conceive of a contagious fever originating anew, than of a plant or an animal—a position which must, however, by no means be taken for granted—the answer is that this is not at all the question at issue; that question being simply what is the value of the evidence which has been supposed to render such a supposition necessary in either case.

But we have already seen that this evidence is negative only, and consists solely in our inability to trace with the eye the continuity of a chain whose connecting links are known to be invisible. To conclude from this that no chain exists, is palpably absurd.

But nothing, I repeat, can show more forcibly *how* absurd it is, than the fact that the same evidence, were it worth anything at all, would prove the spontaneous generation of plants and animals.

Stated in the form of syllogism, the position is this:—Animals and plants are not generated spontaneously, but propagate by the law of continuous succession. It is impossible, nevertheless, in countless instances, to trace their lineage. An impos-

sibility of tracing lineage is, therefore, of no force whatever as an argument against propagation by continuous succession.

This reasoning is as simple as it is conclusive. The steps are few; every step is sure; and the conclusion to which they lead cannot be evaded.

The analogy of living types may, however, be employed to illustrate the phenomena of contagious fevers, not only in this negative sense, but, as showing, by *positive* evidence, what are the invariable characteristics which attach to the dissemination of entities *known to propagate by the law of continuous succession*, when this propagation is effected by invisible germs.

To spring up in unexpected places, and in places where their parentage, not only cannot be traced, but is, at first sight, sometimes even difficult to conceive of; to occur now in a sporadic way, and now over large areas at once; to be powerfully affected by season and climate, but in a manner to show that the influence of season and climate is secondary only, is the law that runs through them all. I need scarcely say what a counterpart this history is to that of the dissemination of the great group of epidemic and contagious disorders.

It would be easy to carry this parallel further, if need were. Sir H. Holland, in his interesting essay On the Hypothesis of Insect Life as a Cause of Disease, has, however, dealt with it in a way which enables me to dispense with any larger development of it here. I will only remark that the time is not so very remote, when, from the impossibility of tracing their descent from actual progenitors, animals and plants of well known species, and known to be endowed with enormous reproductive powers, were also universally believed to be constantly generated spontaneously.

Under the pressure of advancing science, this figment has disappeared, and the law of specific propagation by continuous succession has been finally established in its place. And I think we may plainly discern, not only from the perfect analogy in all essential points of the relations which bear on the question in the two cases, but from the course which opinion has already taken in both, that the time is not far distant when the same conclusion will be extended also to the diseases which propagate by a specific contagion.

Nothing, in the history of this question, is more curious than to see how slow naturalists were to relinquish the idea of spontaneous generation, and with what tenacity they clung to it.

"It is probable," says Plutarch, "that the first generation has been made entire and complete of earth—that is to say, by spontaneous generation." He admitted, however, that in his time, *mice* only were formed in this manner.

"Aristotle limited spontaneous generation to *insects*, to

*molluscs*, and *fishes*"—that is, says, M. Flourens (from whom I quote these and the following two passages,) *to animals of which he knew not the true mode of generation.*"

"A physiologist of the present day, M. Burdach, admits spontaneous generation for *fishes*, but he adds that it would be *too bold* to admit this for toads and frogs."

"M. de Lamarck finds that the *polypus* is too complicated to be produced by spontaneous generation; but he says the *monad* can be produced in that manner. Ehrenberg, who has dissected animals still smaller than the monad and who has discovered in them a structure so marvellous, carefully avoids saying this."

It was but the other day, so to speak, that mildew was universally believed (as it still is by uneducated people) to be the direct offspring of damp, or to be generated by the decay of other organisms; and so, in like manner, until quite lately, it was supposed by many that the *itch* was often actually bred by want of cleanliness. When, however, it was discovered that itch is the effect of a peculiar parasite, this notion, too, had to be given up. Fifty years ago, small-pox was very commonly imagined often to originate spontaneously; or, as the phrase was, "to be bred in the blood." Even Gregory went so far as to allow that this view might be supported by very plausible considerations. In the present day, intestinal fever, cholera, and yellow fever, are believed often to arise *de novo;* but most well informed physicians are of opinion that it would be "*too bold to admit this for small-pox.*" When the true mode of propagation of intestinal fever, cholera, and yellow fever, come to be generally recognised, it will be seen at once that it is quite as bold to teach that these diseases spring up spontaneously, as to teach that small-pox does so.

[One argument of the partisans of spontaneous origin is this — As all contagious diseases must in the *first* instance have occurred independently of contagion, there is every reason to believe they still do so.]

M. Trousseau, who, although an avowed contagionist, is an equally firm believer in "spontaneity," has put the case very clearly. After observing that the spontaneous origin of contagious disorders is not only a fact that cannot be contested, but is an important element in the development even of the most contagious among them, he adds :—

"In fact, as contagion implies necessarily the presence of two persons, the one giving and the other receiving the morbific germ, it is too obvious that in the *first* person attacked by a contagious malady the disease must have developed itself spontaneously, and was formed out of its prime elements, under the influence of causes which are completely unknown to us."

Following up this view, this distinguished teacher suggests

that, many cases in which diseases of this kind spring up in isolated places can only be explained by supposing that the same thing still happens.

Small-pox, that is to say, having once originated *de novo*, must originate *de novo* now. For that, if it is to have any force at all, is what the argument amounts to.

But it is obvious, from what has gone before, that, if this argument applies to the specific contagions, no reason whatever can be shown why it should not apply to animals and plants also.

Itch, being a contagious disease, two persons are always necessarily implicated in its propagation. But there must have been a time when a *first* person had the itch without receiving it from another. The itch insect having originated *de novo* once, must therefore originate *de novo* now. The two facts stand on exactly the same level.

The truth is, that the first origin of the germs of specific contagious diseases and of the great procession of organic types which have successively appeared on the earth is alike unknown to us. By the light of science we know no more of the first evolution of the germ of small-pox or syphilis, than we do of the acarus which inhabits the human skin—of the tapeworm which was appointed to live in the human intestine—of the cystic worm which finds a temporary home in the brain of the young sheep—of the miseltoe which fastens on the oak and the apple—or of the different species of mildew which breed in the grain of wheat. We know no more, by the light of science, of the first origin of *these* living types, than we do of the higher organisms on whose substance they feed.

The precise mode in which *all* these things first came into being is hidden from us by an impenetrable veil.

On the other hand, everything tends to show, that, once created, they all propagate now only in one way. The idea that animals and plants of known species continue to spring up anew is, as we have seen, quite exploded. That small-pox is now only maintained by self-propagation, there are, as we have also seen, the strongest conceivable reasons for believing.

The history of syphilis—and, indeed, of many another contagious disorder—teaches the same lesson. Who among us can say when, or how, or by what process this terrible virus first came into being? Who can name the thrice unhappy man, on whose person, innocent of any unclean contact, it *first* implanted its foul venom? We all know how it propagates now, and that inoculation by the actual contact of two persons is essential to its continuance.

I have always thought it a very significant fact, that, in this case, where the process of transplantation can only be effected

by an act of which two persons, at least, must be cognisant, the idea of spontaneous origin has never once arisen.

Let an isolated case of typhoid fever occur, and, merely because he cannot readily trace the disorder to its source, many a medical man will tell you without the slightest hesitation or difficulty that the disease has, clearly, originated spontaneously. Press him, and he will be ready at once with the argument that there is no reason in the world why the conditions which *first* gave rise to it, may not again give rise to it now.

But let a young sinner with the peccant mark upon him swear ever so stoutly that the disease he bears has come on spontaneously; let him argue as plausibly and as long as he will against the incredulity which refuses to see that the conditions which *first* gave rise to this disease, may again give rise to it now, and the very same medical man will laugh him to scorn.

In small-pox and syphilis, where, from the nature of the facts, the evidence bearing on this question is precise and sure, the answer is unequivocal.

The history of these two diseases is at hand to show—as by a great standing experiment—that these specific contagions, so far from being things that spring up at every turn, have, in reality, come into being under conditions hidden in primeval darkness, and of which we have no experience.

The history of many other contagious maladies is precisely to the same effect. The very significant fact of the exclusive appearance of many among them, in the first instance, in particular geographical centres, whence, sometimes only after the lapse of long ages, they have afterwards spread far and wide, leads to the same general conclusion.

It will be seen that, in the course of this discussion, I have altogether left out of view the formidable objection to the commonly received theory of the spontaneous origin of contagious fevers, which may be drawn from the incomparably specific condition shown in my last communication to attach to the reproduction of the specific germs of these fevers, even in the living body itself.

In taking a survey of the whole question, the only difficulty, indeed, is to say whether the variety, the massiveness, or the precision of the evidence which may be arrayed against this theory, be the more remarkable.

Stated briefly, the considerations which are opposed to it in the case of intestinal fever, may be thus summed up.

1. The known mode of propagation of this fever is sufficient to explain the actual phenomena, so that the "spontaneous" hypothesis is wholly gratuitous.

2. Under the definite form which it has hitherto taken—that this fever is often actually caused by the products of common

putrefaction—this hypothesis, when subjected to a searching examination, entirely breaks down.

3. The evidence which is supposed to render such an hypothesis necessary, would, if of any force, render it equally necessary not only in the case of small-pox, but in that of plants and animals also.

4. In regard to all the specific contagions whose history in past ages is known—such as small-pox and syphilis, for example—there are the strongest possible reasons for believing that, whatever their primary source, they propagate now only by the law of continuous succession.

5. The incomparably specific conditions which attach to the reproduction of the fever poison, even in the living body which is its natural *nidus*, render its evolution by spontaneous origin not only exceedingly improbable, but difficult to conceive of.

To some it will, perhaps, seem that I have laboured this point with unnecessary minuteness. A little reflection will will show that the fact is not so.

Viewed in relation to this fever alone, the question is plainly one of cardinal importance. So far, however, from being thus limited, the same question recurs in the case of all the other epidemic and contagious disorders.

For some, possibly, a stronger case may be made out; and in these, if such there be, the point at issue must be argued on its own grounds. But on evidence in all respects identical with that which has been here discussed, a claim has been set up for the spontaneous origin of Asiatic cholera, of yellow fever, and of a host of other specific contagions. It was well, therefore, if only to avoid the need of going over the same ground again, to see once for all, what this evidence is worth.

With the case of small-pox, and that of animals and plants, before us, it will, at any rate, not be required of us to believe in the spontaneous origin of cholera, simply because the succession of cases often cannot be traced.

The conclusion at which we have come is important, also, in another way.

The moment we are entitled to look upon typhoid fever as a disease which, like small-pox, is propagated solely by its own germs, the facts relating to its spread, instead of being interesting only in a negative sense, acquire a value of a *positive* kind.

As illustrations of what is *known to happen*, when a disease so propagated is spread by liquid discharges, they are of the greatest possible help in interpreting the phenomena which characterise the dissemination of other contagions which are spread by liquid discharges too.

By the light of what we have learnt of typhoid fever, the

dissemination of Asiatic cholera, of dysentery, of yellow fever, not to mention other members of the group, becomes easy to read.

In addition to all this, a point of high equity is concerned in the argument. On all accounts it is time that the opposite parties in this great debate should be placed in their true respective positions. Whenever, and wherever it is opened, I observe that the contagionists are uniformly treated as if they, and not their opponents, were guilty of dealing in assumptions, and of going against evidence.

I need scarcely remark that the truth is precisely the opposite of this.

At all events, as regards this fever and the other members of the same family group, the contagionist alone proceeds on the solid basis of fact, and has the support of analogy, as massive as it is precise, where from the nature of things the direct evidence of fact is not to be had.

We know that the poisons of small-pox, typhoid fever, and cholera are multiplied in the human body, almost as certainly as we know that corn is raised from its own grain, or that thistles spring from their own seed.

That these poisons are multiplied in any other way is not only pure hypothesis, but, as we have seen, an hypothesis that has, besides, the fatal effect of being entirely gratuitous,—of being in opposition to an analogy that is of any worth, and of being in one of these cases, at least, only tenable at all by heaping one assumption upon another.

P.S.—As I have reason to believe that some readers have not fully apprehended the drift and purpose of the argument developed in the preceding pages, in consequence of not having seen the series of papers on the same subject, which I published in the Lancet in 1856-58-59, it may be well to state that in that series will be found data which, to myself, appear to establish by the most strict and severe induction from incontrovertible facts, the following conclusions.

1. That typhoid or intestinal fever is essentially contagious.
2. That the living body of the infected man is the soil in which the poison breeds and multiplies.
3. That the reproduction of the poision in the infected body, and the disturbance attaching to it, constitute the fever.
4. That this reproduction is the same in kind as that of which we have, in small-pox, ocular demonstration.
5. That the intestinal affection is the specific eruption of the fever, and is related to it in the same way in which the pustules on the skin in small-pox are related to that disease.
6. That the exuviæ from the surface which is the seat of this eruption contain, as we should have expected, the most virulent part of the contagious principle.

7. That, as a necessary result, sewers, and the cloacæ which fill the office of sewer, are the principal media for the transmission of the contagion; and, consequently, that in many instances the infected sewer, and not the infected man, appears as if it were the primary source of the specific poison.

8. That, once cast off by the intestine, the contagious matter may communicate the fever to other persons in two principal ways: either by contaminating the drinking water; or, which is by far the more common case, by infecting the air.—*British Medical Journal, Dec.* 7, *and Dec.* 14, 1861, *pp.* 604, 625.

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## 2.—ON THE CAUSATION OF TYPHOID FEVER.

Mr. Simon's latest opinions on the much discussed and important question of the etiology of typhoid fever have undergone changes. In the last printed report to the Privy Council (April, 1861), Mr. Simon thus expresses himself strongly in favour of the essentially contagious character of the disease, and its specific power of infection:—

"Since I last reported generally on the subject of typhoid fever (Report 1858) an addition has been made to the literature of that disease, by the publication (the Lancet, July, 1859—March, 1860) of a series of papers by Dr. William Budd, of Bristol. Dr. Budd's opinions, as regards the causation of typhoid fever, are as follows:—That the fever is essentially contagious; that the living human body is the soil in which the specific poison breeds and multiplies; that all the emanations from the sick are infectious; that by far the most virulent part of the specific poison by which the contagion takes effect is cast off by the diseased intestine of the fever patient; that the characteristic affection of the bowel in the disease is, in reality, the specific eruption of a contagious fever; that the sewers and other places into which all this virus passes are the principal channels through which the fever is propagated; *that they propagate it solely in consequence of being the channels for the diffusion of this poison;* that it no more is the offspring of common sewage than mildew is the actual offspring of damp and decay; and that 'by placing two ounces of caustic solution of chloride of zinc in the night-stool on each occasion before it is used by the fever patient, the intestinal discharges may be entirely deprived of their contagious powers.' To anticipate some arguments which might be urged against parts of this doctrine, Dr. Budd observes, that typhoid fever scarcely ever re-attacks a person who has once suffered it; and that, 'like malignant cholera, dysentery, yellow fever, and others that might be named, this is one of the great group of diseases which infect the ground.'

"The facts which Dr. Budd adduces from his own experience and from that of other observers are, in my opinion, sufficient to prove that the contagion of typhoid fever is importable by persons who have the disease. Indeed on this point Dr. Budd's history of the North Tawton fever and its off-shoots (the Lancet, July 9th) is more conclusive than anything previously known to me. And his arguments are also, I think, cogent to this general effect—that specially the bowel-discharges of the disease are means (yet not therefore necessarily the sole means) by which a patient, whether migrating or stationary, can be instrumental in spreading the infection of typhoid fever. Provisionally these conclusions must be acted upon in their present unqualified form. But doubtless it is of practical importance to learn, as exactly as possible, whether it is in all states and under all circumstances, or only in certain states and under certain circumstances, that the bowel-discharges of typhoid fever can effect what is here imputed to them. Typhoid fever seems to be, in its causes as in its nature, very intimately related to other diarrhœal affections."

These opinions are entitled to especial attention and worthy to be carefully noted, if only because they are the conclusions of a sound pathological and able thinker, based necessarily upon the largest generalization and the greatest number of facts which any man can possess in this country. In addition to the scientific weight thus given to them by the personal and official advantages under which they are formed, the views of the principal medical officer and official adviser of the Privy Council represent also for the time being those of the Government, and have, therefore, the practical importance which belongs to words that may at any moment be vitalized by action. We stated that Mr. Simon had in his last report adopted certain of the contagionistic theories which Dr. Budd of Bristol so ably brought forward in the columns of the Lancet. It is proper to add, that Mr. Simon annexes certain limitations, which modify his adhesion to these important doctrines. In qualification of the quotation which we have already given, we append the following further remarks of Mr. Simon:—

"Typhoid fever seems to be, in its causes, as in its nature, very intimately related to other diarrhœal infections. And with reference to the possibility of its being only contingently contagious, I quote, for illustration's sake, from my report of 1858, the following passage referring to epidemic cholera:—'Some interesting and important experiments made in 1854 by Professor Thiersch, of Erlangen, seemed to show that cholera evacuations *in the course of their decomposition* acquire a contagious property.

It is much to be regretted that experiments were not simultaneously conducted by Professor Thiersch, with a view to determine whether ordinary fæces, or ordinary diarrhœal fæces, *undergoing decomposition during an epidemic period*, would not likewise have acquired that property; for the prevalence of exterior conditions, which tend to determine in certain localities a specific infectious decomposition of excrement, seems to be the essence of an epidemic period. That this decomposition may begin in the bowels, as well as in cesspools, seems possible enough; and perhaps herein lies the explanation of the many cases in which human intercourse has apparently diffused the disease. For, according to the observations of Professor Pettenkofer at Munich, and Professor Acland at Oxford, it would seem that during cholera-periods the immigration of persons suffering diarrhœa has been followed by outbreaks of cholera in places previously uninfected; and Professor Pettenkofer ascribes this fact to an infective influence exerted by the fæces of such persons in the cesspools and adjoining soil of ill-conditioned places to which they go. An infection of this kind would probably extend itself to the polluted well-waters of such soils, and might render them, if swallowed, capable of exciting cholera by direct contagion. It is encouraging to sanitary reformers to observe that cases of apparent introduction of cholera contagion by human intercourse are essentially different from such cases of infection as are presented by measles or small-pox. The multiplication of poison in the latter diseases takes place exclusively within the human body; it has no immediate dependence on differences of medium, and wherever human beings can cross one another's path, the susceptible person may contract infection. But the cholera-poison, if indeed it can at all be multiplied within the body, almost certainly has its great centres of multiplication elsewhere, in those avoidable foci of corruption where excrement accumulates and decays. And likewise for diffusing its contagion, if truly the disease be contagious, foulness of medium seems indispensable. Indeed, it is no ordinary foulness which taints the air or food or water with the leaven of decaying excrement. Therefore, as regards cholera, it seems highly probable that the immigration of infected persons might occur to any extent without exciting epidemic outbreaks, if it occurred only into places of irreproachable sanitary conditions, especially as regards the supply of water, and the continuous removal of house-refuse. Compare Pettenkofer über die Verbreitungsart der Cholera, 1854; Acland on the Cholera at Oxford, 1856; and Thiersch's Infectionsversuche an Thieren mit dem Inhalte des Cholera-darmes, 1856.'"—*Papers relating to the Sanitary State of the People of England.—Lancet, Jan.* 18, *and Feb.* 1, 1862, *pp.* 77, 135.

## 3.—ON TYPHUS FEVER.

### By Dr. Gull, Physician to Guy's Hospital.

In reference to the course of the fever, Dr. Gull said that it might be likened to an inverted curve. For instance, from the outset, day by day they get gradually worse, the pulse becoming more frequent and weak, the breathing more rapid, and the symptoms of exhaustion increasing. A point is at length reached when the symptoms as gradually improve. As the first stage represents the descent, the stage of recovery represents the corresponding ascent up to the plane of health. He stated that the lowest part of the curve was arrived at on the fifteenth day, the depth of the curve being best determined by the pulse and breathing. The idea of the cyclical course of a fever was of practical importance. It indicated that the disease had a definite physiological history, and that it would, in spite of interference, complete it; that the patient must, in the nature of the case, get worse up to a certain point; and that then, if he had sufficient vigour, he would as certainly begin to mend. To enable the patient to reach this point was the important aim of treatment. That there is a certain turn after which amendment begins, has not been sufficiently recognised in later times, and hence the improvement has often been ascribed to treatment, rather than recognised as a natural feature of the disease. A few years ago, Dr. Gull said, when he was investigating typhus fever as to the question of time, he had under his care a patient who was extremely ill with the disease, and further gradually gravitating downwards. He was strongly urged to treat her with wine and brandy. He felt so certain, however, that this gradual increase of the bad symptoms was but the natural progress to a crisis, which he felt convinced the patient had vigour enough to reach and bear, that he did not complicate the case by treatment with stimulants. He gave simply beef-tea, broths, and milk. The pulse advanced to 120, and for some hours to 130, but on the sixteenth day it began to fall, and the patient steadily improved. If, then, in this case, he had given stimulants, the recovery might have been attributed to this rather than to the natural course of the disease. The course of typhus, Dr. Gull said, was a very simple one, perhaps the most simple of any fever; in others it was often very complicated. When the lowest point was turned, there was in typhus but little trouble afterwards. The most necessary things in this disease were good hygiene and good nursing. If the patient can be kept alive for fifteen or sixteen days, he may be expected to recover, and is usually safe.

Although, Dr. Gull said, he believed firmly in the distinction of typhus and typhoid fever, he also believed that an advanced

comparative pathology would show that they had a relation one to the other. In the present state of our knowledge, however, and for practical purposes, they are to be thought of as distinct diseases.

How does the patient get well? This is a question the answer to which bears on the therapeutics of the disease. Thus, some say that the patient gets well when he has eliminated the poison. If the typhus condition depended on the presence of a certain quantity of poison, it was difficult to believe that the patient could recover if he only recovered by eliminating it, for he was placed in just the same position for imbibing it as he was when exposed at first. Then it is just when the fever is most intense that the patient begins to improve. Though a typhus miasma emanates from the sick, there is no evidence that it is thrown off by elimination, leaving the body free of it; and now that it is eliminated, that it would not be re-absorbed. There is no reason, Dr. Gull said, for admitting that the poison was in less quantity in the body on the sixteenth day than on the day previous. The marked improvement about a certain day could not be accounted for on the elimination theory; it was plainly a result of living processes governed by time. He (Dr. Gull) could not believe in the theory of recovery by elimination. Whilst the patient was getting well, he was a source of infection to those around.

The common theory chiefly supported by the chemists is, that the poison of fever acts as a ferment in the system, inducing a peculiar zymosis, as it is called, whereby the fermentisible substance is destroyed, and coincidently the fever process ends, and the patient recovers, or, at least, has but to regain strength. In order to make this theory hold together, the chemists say that a person is born with certain substances in the body, as proved by the tendencies to various fevers,—*e.g.*, a something the fermentation of which by the scarlatinal poison results in the phenomena of scarlet fever, another something acting on which the rubeoloid poison produces measles, and so for all other fevers. The patient is no longer susceptible after having once had a fever, because all the special "fermentisible" material has been exhausted by an attack. Dr. Gull said that he could not accept this theory. He thinks that instead of the system getting rid of the poison, it has, on the contrary, assimilated itself to it, and thus become indifferent to it. The facts of acclimatisation are of an analogous kind; a person who goes to a new climate is subject, and soon suffers from the diseases peculiar to the climate, which diseases do not, or less frequently and to a much slighter degree, attack the natives. And further, that the person thus exposed, in time acquires an immunity from further trouble. Again, as regards poisons, it is well

known that a person after a time may take poison without harm, for instance opium, which would kill another person who was not used to it.—*Medical Times and Gazette, April* 5, 1862, *p.* 348.

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4.—*On Typhus Fever.*—Professor Griesinger, who is Director of the Medical Clinique of the University of Zurich, has recently observed a rather considerable number of cases of typhus, and gives the following differential diagnosis between this disease and typhoid fever. In the former the exanthema appears much earlier than in the latter, and is generally much more extensive. Thousands of red spots are, in certain cases, seen to cover the trunk and the extremities, especially the forearms and the thighs; in a few cases spots are also observable on the face, and they sometimes flow together, which is never observed in typhoid fever. In the latter the spots, which are at first of a bright red, become pale and disappear after four or five days; while in the former they become dark, livid, and of a dirty colour on the third day, and they do not then disappear, but a slight hemorrhage takes place in them, whereby they appear petechial. These remains are generally visible for from ten to fourteen days, even after the febrile symptoms have entirely disappeared, which is scarcely ever observed in typhoid fever.

The whole course of typhus is also very peculiar. While in typhoid fever an increased temperature in the morning may be generally observed for three weeks, the morbid heat in typhus diminishes suddenly and without interruption within two days; just as in pneumonia, erysipelas of the face, &c. In typhus the patients complain of violent pain in the limbs, especially in the calves, which persists during the whole stage of acme; and even after all febrile symptoms are gone, the tongue sometimes remains dry and swollen. The convalescence is generally very slow and protracted, and in some patients an extraordinary emaciation results. The mortality in the cases observed by Professor Griesinger was small, as of sixteen only one died. In two cases typhus appeared immediately after typhoid fever, so that there can be no doubt about the existence of two different contagia.—*Med. Times and Gazette, Dec.* 21, 1861, *p.* 645.

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## 5.—ON THE RENEWAL OF LIFE IN CONTINUED FEVER.

By Dr. Thos. K. Chambers, Physician to St. Mary's Hospital.

[In the treatment of continued fever, recollect that a large supply of nitrogenous material must be wanted in the system: for, the nitrogenous tissues are devitalized, and running away

in an enormous excretion of urea and other organic compounds, and nothing is taking their place. If we attempt to supply nitrogenous matter in the form of flesh meat of any kind, not only do we not gain our end but we do actual injury to the patient. Animal food must be given in the liquid form, not in large quantities at a time, but in small and oft-repeated doses. Milk may be given as a food with advantage, but it sometimes happens that the casein is rejected in lumps, being coagulated by the acid in the stomach. This may be guarded against by adding liquor calcis, or soda-water to the milk. Eggs are a highly nutritious food; and, if taken raw, diluted with milk and water, they are quickly absorbed. Turning our attention to the Materia Medica, we recollect that]

Ammonia, which is always being formed and given off from the animal body, is found much more abundant in certain conditions than in others, and that these conditions are those in which nutritive metamorphosis or growth was deficient as compared with destructive metamorphosis, or those in which there is retention in the blood of the products of that destructive metamorphosis. Thus, more ammonia is found in the breath after exertion than after rest; more than usual in those who injure their digestion by smoking tobacco; a great deal in uræmia, where the urea cannot escape by the kidneys; but above all, in continued low fever is this exhalation of decay noticeable, as you will find in Dr. Richardson's valuable work on the "Coagulation of the Blood," where the phrase "super-alkalinity of the blood" is applied to this condition. Dr. Richardson goes so far as to attribute to this super-alkalinity the special typhoid symptoms, and to suggest that the absorption of ammonia in excess may intensify fever in those who contract it from exposure to decaying organic matter, or human exhalations. He supports his hypothesis on the experiment of inducing the symptoms, or something resembling them, by the injection of ammonia into the veins of an animal. The word "super-alkalinity" is expressive, and quite unobjectionable, so long as it is understood that the superabundance is not absolute, but comparative. For it is not shown that there is more alkali in the body than there ought to be, but more than there is acid to neutralize. "Sub-acidity" would be a synonymous term, and, perhaps, would be more suggestive of the means we have at our disposal for remedying the defect.

Very difficult indeed would it be for the Eliminator to get this alkali out, but it is easy for the Restoratist to get acid in. The acid I have always given is hydrochloric, and you consequently see on this lad's card—"℞. Acidi hydrochlorici dilut. ℥xx., syrupi ℥j., aquæ ad ℥j., alternâ quaque horâ sumat."

Rich patients like a little more sugar, and the draught is usually approved of even for its taste. But it is still more approved of for its beneficial effects. This boy said to-day of his own accord he hoped I should continue the draughts, they made him "feel so much stronger," meaning to express the sensation of relief to the depressing wearying languor of fever. In mild cases the tongue begins to clean immediately, the thirst and diarrhœa much abate, and the repugnance to food is diminished.

Whether other acids would do as well as the hydrochloric I cannot say, but it is so largely diffused through the body combined with alkali as a constituent of the tissues, that it appears peculiarly suited to the purpose. I have now used it in every case of low fever for four years, and have not lost one, except a woman who came in here with deep ulcers in the bowels, and was killed by perforation. In a clinical lecture at this Hospital in January, 1858, I gave the details of the first dozen cases treated on this plan, and I must say that my confidence in it is by no means diminished.

As you are a different audience from that which heard me at that time, perhaps I may be allowed to quote in repetition my own words—"What blood, when analyzed, comes nearest in its altered proportions to the blood in low fever? Is it not that in scurvy and purpura? There is the same excess of blackened (melanosed) blood discs, the same deficiency of neutral salts and organizable (coagulable) lymph. Everybody treats these chronic affections with acids, and why not also an acute affection which corresponds with them in one point at any rate? As to the particular acid employed, muriatic certainly deserves to be tried before others—first, because it is such a large constituent of the body that it might almost be called a food instead of a medicine; and secondly, because it is such a powerful arrester of the decomposition of animal matters. Pour it into a sewer, and you destroy the miasma. May it not in the body stop that miasma from poisoning the tissues?"

The allusion in the last sentence is of course to chlorine as a disinfectant. But I do not know that there is any evidence of the benefit derived from the hydrochloric acid treatment being due to this property. About sixteen years ago, I employed chlorine water as a medicine in fever at the Chelsea Dispensary; but I was not encouraged to carry on the treatment by tracing any benefit to it. Whether the chlorine which can be introduced in this way is not sufficient in amount (for it must be dilute, or it induces so much choking) or whether it is really useless, I do not know; but I left it off for years, and adopted the muriatic acid from the description which Mr. Ash gave me of the advantageous use of it by Dr. Mackenzie.

As to the use of alcoholics in continued fever, I am guided almost entirely by the condition of the nervous system. If there is very complete prostration, delirium of a low muttering character, it is required. A tremulous state of the muscles, marked especially by a quivering of the hands and fingers, is a good test of the necessity for it; and so is a sharp, weak, unequal beat of the heart. All these indicate that the nervous system is feeling very sensitively the destructive metamorphosis going on, and has its power reduced by its sensitiveness. Then is the opportunity for the powerful anæsthetic alcohol, which in severe cases you see me order without scruple, but which I do not rank as part of the systematic *methodus medendi* of continued fever, and have not yet ordered for the lad we have been prescribing for. Above all, I would caution you against employing wine as a substitute for the true restorative treatment which I have been describing. It may be useful as an adjunct or to assist it, but never in its place.

There is, though, another of the adjunctive methods of treatment—exceptional, but often required—which has been employed with utility in this case—the local abstraction of blood. The boy had congestive pneumonia of the lower lobe of one lung, and I did not hesitate to cup him beneath the scapula on that side. And not unfrequently when there is pain in the right iliac fossa, with diarrhœa and tenesmus, I put leeches on the belly at the seat of pain. You saw the dulness on percussion rapidly pass away from the lower lobe in our patient here; and you will often see an equal relief to the abdominal congestion by a corresponding agency.

But you will cry out that I am sadly inconsistent. I am feeding up the patient with one hand and taking away his *pabulum vitæ* with another. The reproach is just in a sense, but that a very limited one; and, in fact, may be levelled against half the operations of daily life. We are constantly suffering a small loss for the sake of greater gain. And I think the loss of a little blood is insignificant compared with the advantage of securing a freer circulation through the lungs, a diminution of congestion in the intestinal canal. Do not be led away by the superficial notion that blood is blood, and blood is life. That is not true, for the blood varies immensely in its composition, some being very valuable, and other worthless. To lose some of the half-dead circulating fluid of fever is but little loss, and that little loss is amply compensated for by the additional nutriment which a small blood-letting will enable to be absorbed. The deficiency is soon made up again under the restorative system.

In the sequelæ of low fever, more than in any other disease, the great difference between one patient and another as respects

heir power of recovery, lies in their stomach. There is a little irl of four years old, now in Victoria Ward, who was admitted n the 2nd of September, for rose-spotted fever, which had come ut during the concluding week of August. She got through he fever pretty favourably, but for the last seven weeks has ad a succession of most formidable abscesses in the back, the ervical glands, the internal ears, and the parotid glands; yet, n spite of the exhausting effect of the large discharge of pus rom these spots, she has continued advancing in convalescence, he has gained flesh and muscular power, so that now she can it up. For this favourable result she has to thank a most ronderful appetite, which never seems satisfied, even with an mount of food which is large for an adult, and which she elights to wash down with wine and porter. No tonics seem f so much use to her as an extra snack at physic time.—*Med. Times and Gazette, Nov.* 23, 1861, *p.* 523.

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## —ON THE EMPLOYMENT OF QUININE IN FEVERS AND OTHER DISEASES.

By Dr. J. C. Cameron, Deputy Inspector General.

Quinine is the master key to the treatment of nearly every ropical disease, in nearly all of which *attention, once directed to he point*, will rarely fail to detect a periodic type—that is, a istinctly recurring exacerbation of symptoms, but not neces- arily involving increased heat or rise of pulse. Thus in dysen- ery, the most dreaded disease of the tropics, a patient will have rapid succession of bloody stools, with aggravation of tenesmus, nd great prostration, at some certain period of the twenty-four ours; and, in such cases, one or two ten-grain doses of quinine, ven, in the interval, will often ward off the attack, just as it ould that of ague, and usher in recovery.

The malarious type of dysentery is one of its most fatal forms, nd should be regarded, in a great measure, as essentially fever, ith disease of the bowels superadded, though unfortunately he urgency of the local symptoms too generally occupies the hole attention of the physician. This is the form of the dis- ase constantly seen in woody, marshy countries like Ceylon, nd which, asthenic in itself, becomes deadly if treated, *merely r its name*, by the usual routine of aperients, leeches, calomel- nd-opium, particularly when it appears amongst a body of en weakened, as soldiers so often are, by constant solar expo- ure, night duties, and want of proper nourishing food. In ch cases, after a dose of oil, quinine should be given to the xtent of twenty or thirty grains in twenty-four hours, with as uch ipecacuanha as the stomach can be got to bear, aided by

opiates, astringents, counter-irritation, and plenty of nourishment suitable to the disease. The acute capillary bronchitis, which, treated on the old system, used to cause great mortality amongst infants and young children in those countries, is in like manner essentially fever, and its most alarming symptoms, when the tubes are stuffed with mucus, and the child half asphyxiated, will often subside with astonishing rapidity after a smart emetic, followed by frequently repeated doses of quinine, combined, if it can be done, with ipecacuanha or James's powder. The youngest infants can take with benefit from two to five grains of quinine in twenty-four hours, and in their case this mode of treating fever is a particularly great improvement, as the dosing such little creatures with calomel, antimony, &c., on the old system, was most distressing to all parties concerned, and too frequently ended in death. Few people have any idea of the fearful amount of mortality amongst the children of our soldiery in the tropics, particularly in regiments not blessed with a kind-hearted, patient assistant-surgeon, who will take pity on the neglected women and children, and devote some attention to the little folks' ailments. Nor do I believe that the powers of quinine to overcome such (apparently) acute forms of disease are at all limited to the tropics. During the last three years I have used it very freely in the same way in England, and often with rapid relief to the patient, particularly in catarrhal and bronchitic affections during the last severe winter.

When one reflects on the vast number of valuable reports which have necessarily been furnished to the respective medical boards, embodying the experience and knowledge acquired by thousands of educated men, in all corners of the globe, it is clear that a separate bureau for practical medicine ought long ago to have formed a special department of each office. At its head should be an able officer, charged to keep the scattered members of the corps acquainted with all discoveries and improvements in their art, and to *digest* and publish for general information the detailed observations on climate, topography, disease, and its treatment, which are furnished from our immense possessions. To do this effectually and permanently, he would require to send forth, not a tardy volume, like the recent "Army Medical Reports," dealing in crude generalities, through which readers must wade to conclusions, and containing flimsy "Annual Reports," which it would be a libel on the Department to consider the best specimens furnished amongst several hundreds; not a ponderous tome of this sort, but a military medical journal, a regular bi-monthly or quarterly periodical, the very establishment of which would call forth a general *esprit-de-corps*, and induce many of its ready-made body of su-

cribers to become frequent contributors. With this there hould be given at stated periods, say of three or five years, an nalytical retrospect of the advances made and results esta- lished, in its pages during each interval. In this way we should ave always available an immense body of information on all ountries and climates, now scattered and buried, no one knows here. We should also see established on the sure foundation, ot of clever theory, but of successful practice, a definite system f treating climatorial diseases; so that when a young officer nded in one of our colonies he would be enabled to begin here his most experienced predecessors left off, instead of being eft, as now, either to grope his way to their conclusions at a reat waste of human life and suffering, or perhaps never to each them at all.—*Lancet, Nov.* 9, 1861, *p.* 457.

## 7.—ANARCOTINE IN REMITTENT FEVERS.

In the Indian Annals of Medicine for September 1861, there s an elaborate and able report addressed by Dr. A. Garden, of Ghazeepore, to the Deputy Inspector General of Hospitals, on he therapeutic uses of anarcotine, tabulating in various forms he results of its employment in nearly 700 cases of intermittent evers. Turning to our systems and dispensatories, we find it riefly noticed that this substance has been employed as an ntiperiodic by Dr. Roots and Dr. O'Shaughnessy. This brief otice has, it appears, been wholly overlooked or neglected in his country; and yet, as we shall show, anarcotine possesses herapeutic properties well worthy of the attention of British ractitioners.

It is generally known, that one of the crystalline constituents f opium received from chemists the name of "narcotine," nder an erroneous impression that it was the narcotic principle f that drug. So far from this being the case, it has not the lightest claim to that title; and, consequently, it is very pro- erly proposed to prefix the privative letter *a* to the name, and enceforth designate it as *anarcotine*.

Referring to Sir W. O'Shaughnessy's original statement, we nd him saying:—

"I have now employed the narcotine in sixteen cases of emittent fever, and such is my opinion of the efficacy of the emedy, that in instances of fever, intermittent and remittent, n ordinary healthy subjects, and in whom there is no com- lication of severe organic disease, I give it with the full expect- tion of arresting the next periodic return of the fever. I have een the result follow in ten of the cases of the fever alluded to. consider narcotine a more powerful antiperiodic than quinine. he remedy does not act silently. I have observed a degree

of general heat follow its use in the first instance, and subsequently perspiration, so that it appears to excite in the system a salutary and powerful counter-action, as to stop the morbid concentration that issues in fever. I have not observed narcotine to lead to organic disturbance in the cases in which I have used it. In short, even from my scanty experience, I consider the remedy an invaluable one."

To his own testimony Sir William added the experience of several practitioners, who speak in the highest terms of its value as an antiperiodic, especially applicable—1st, in quotidian fevers; 2nd, in cases complicated with visceral enlargements of the liver, spleen, &c.—or local inflammations, as of the bowels—or cerebral congestion; 3rd, in cases of intermittents supervening upon surgical operations; 4th, after failure of quinine, or both quinine and arsenic.

Anarcotine is a white, inodorous substance crystallizing in prisms, insipid to the taste, insoluble in cold and sparingly soluble in boiling water, more soluble in alcohol and ether, insoluble in alkaline solutions. It forms salts with the mineral acids which have a very bitter taste, similar to that of quinine. The sulphate and hydrochlorate are the most convenient for internal use. Anarcotine is obtained from the residue of opium left after separation of the morphia. Hence it ought to be a very economical medicine.

Dr. Garden's investigations, as recorded in the report alluded to, were directed to the therapeutic value and peculiarities and the commercial advantages of the use of anarcotine, and the conclusions he establishes are as follows :—

We have in anarcotine a remedy which fails in only 3·6 per cent. of all cases treated by it alone; and, without regard to the previous duration of the disease, and taking both quotidian and tertian agues, it arrests the fever on the whole average before the recurrence of a third paroxysm after the commencement of the remedy.

In small doses anarcotine acts as a tonic, increasing appetite and improving the tone of the system generally. For this purpose, from half a grain to a grain of the sulphate, combined with a slight excess of sulphuric acid, is a sufficient dose.

As an antiperiodic, a grain and a half to three grains or more, even to the extent of six grains, may be given at suitable intervals. Its most appreciable effect on the system is, that it increases the heart's action, raising the pulsations from ten to twenty beats per minute beyond the ordinary amount, and renders the pulse somewhat fuller.

In larger doses (five to fifteen grains) it produces increased heat of surface and diaphoresis, and sometimes disagreeable symptoms—nausea, giddiness, and vomiting. These, however

disappear on lessening the dose, in most cases. The author remarks, "In several cases I have obtained marked benefit by combining tincture of opium with the sulphate of anarcotine." "The only objection to the medicine is its tendency to produce constipation;" hence, before and during its administration, purges are necessary.

In reference to the relative economy of anarcotic and quinine, Dr. Garden's tables are full and conclusive. The average quantity of sulphate of anarcotine required to arrest intermittent fevers was found to be twenty grains for quotidians, and something less than forty grains for tertians; whilst about sixteen grains were demanded during convalescence from both kinds for the re-establishment of health. If it fails in a small per-centage of cases, this is not more than is experienced with quinine, to which it is nearly if not quite equal in therapeutic value as an antiperiodic.

As a matter of mere scientific curiosity, not of any present significance in therapeutics, we may add that organic chemistry separates anarcotine into four homologous bodies, which, by decomposition with caustic potash, yield homologous volatile bases :—

| | | | |
|---|---|---|---|
| Normal anarcotine—yielding ammonia. | | | |
| Methylic | ,, | ,, | methylamin. |
| Ethylic | ,, | ,, | ethylamin. |
| Propylic | ,, | ,, | propylamin. |

—*Lancet, Jan.* 11, 1862, *p.* 53.

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## 8.—ON THE ALBUMINURIA OF FEVER.

By Dr. George Johnson, Physician to King's College Hospital.

The following is an extract from a clinical lecture on Typhus and Typhoid Fevers. Dr. Johnson, after showing the importance of a chemical and microscopical examination of the urine from time to time during the progress of fever, observes :]

Renal congestion and inflammation, with albuminuria, are more frequently than is commonly supposed the cause of the early occurrence of drowsiness, and other formidable head-symptoms in the course of these diseases. When, during an early stage of the fever, the urine becomes scanty and bloody or highly albuminous, there are three points of practical importance to which your attention should be directed. First. Give a guarded prognosis, for the complication is a serious one. Second. Give alcoholic stimulants more sparingly and cautiously than you do when the kidneys are unaffected, otherwise you may increase the renal congestion and with it the stupor and

other cerebral symptoms. Third. With a view to lessen the congestion of the kidneys, counter-irritate over the loins, either by poultices of one part mustard to two linseed, or, perhaps, better by dry cupping repeated daily, or twice a-day.

For the relief of this renal complication during the progress of fever, whether typhus or typhoid, or scarlatina, it appears to me that the practice of packing in wet blankets, carefully and judiciously carried out, is admirably adapted. I have hitherto had but a limited experience of this plan of treatment, but the results in the hands of others have appeared to be so favourable that I have determined on giving so obviously rational a proceeding a fair trial.—*Med. Times and Gazette, March* 1, 1862, *p.* 216.

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## 9.—ON THE EXTERNAL USE OF THE SOLUTION OF PERNITRATE OF MERCURY IN EPITHELIAL CANCER,

### LUPUS EXEDENS, AND THE INDURATION OF CHANCRE.

By JOHN GAY, Esq., Surgeon to the Great Northern Hospital, &c.

This preparation, is, I believe, a concentrated solution of the red oxide of mercury in hot nitric acid, and is said by chemists to have a very strong affinity for ammonia. It is on this account, perhaps, that it exerts so powerful an influence over some of those abnormal tissues of the body which are rich in the elements of that alkali, but comparatively poor in respect of vital power. To this influence I will now especially direct attention, but without claiming any originality either in the practice of employing it, or in the observations which my experience of its power has enabled me to make.

Perhaps the most striking effect of this agent is that produced by its application to *epithelial cancer*. I have now tried it in a considerable number of cases, and can affirm that, so far as this affection is curable by its perfect local eradication, the solution of the pernitrate of mercury can effect a cure. I will give two cases which will serve to illustrate its value and *modus operandi*. I might give many more, but they would be only repetitions of the same account.

Mr. A., aged 52, a farmer, in other respects a most healthy and robust man, asked my advice for a cancerous growth (epithelial) on his lower lip. It seemed to occupy the whole of the edge, but had not extended to the junction of its mucous membrane with that of the jaw. Towards the left corner, it had grown to the size of a very large walnut; and the surface had ulcerated, exuding a thin and slightly offensive discharge. There was an apparent absence of glandular contamination. It was uneasy, and growing steadily, but perhaps not rapidly; the whole having been in existence for about a year and a half.

advised either excision or caustic. The latter was preferred. I need not follow the details beyond stating that I applied the solution of the pernitrate abundantly over the whole of the ulcerated surface, not at all careful to keep the application within its limits. It gave great pain, but only for an hour or two. It had the effect of destroying a layer of the diseased growth, which came away as a slough on the third day. The remedy was applied, or rather, the surface was soaked with the solution, twice a week for a period of six weeks, with the same result after each application. As it destroyed layer after layer of the cancer, so the wound deepened; but at the same time the adjoining tissues closed in by granulation from every point of healthy tissue, as this was stealthily reclaimed from the invasion of the cancerous growth, until at length, *even under the continued application of the agent*, the whole surface threw out healthy granulations, and the wound healed with scarcely a mark, and without loss of healthy structure.

B. V., aged 30, was admitted into the Great Northern Hospital for an affection of the under lip, supposed to be an erectile tumour. It consisted of a large swelling occupying the whole of the lip, of a deep purple colour, elastic, and without any abrasion of surface. The coronary arteries had been tied when the tumour was much smaller, but without any apparent results; for it continued to grow, until at length it became both so unsightly and inconvenient that the patient desired its removal. I removed it in the usual manner, taking care to include the whole of the diseased structure in the resected tissue. The hemorrhage was unusually great; the blood flowing from many small, as well as from the usual larger arteries. The edges of the wound were brought together by pins.

The growth was, to outward appearance, simple erectile tissue; but, from the sequel, it will be found to have been also the seat of cancerous elements. On the third day, the two portions of lip had only united at the edge; whilst the remainder of the wound, even the wounds made by the needles, and its alveolar base, had become covered by a fungoid excrescence, which discharged blood and a thin pus; grew rapidly, and left no doubt of its malignant character.

Further cutting was out of the question. I at once applied the solution of the pernitrate of mercury. It was attended with great pain. A considerable slough came away. The application was repeated daily, and with the same results.

Although the growth was rapid, the destructive powers of the agent were still more so; and to my surprise, as well as that of my colleagues, the wound (which now assumed the appearance of a large ulcer) began to contract in size; the healing edge keeping close up to the limits of the diseased growth, and fol-

lowing it as this gave way to the action of the caustic, until cicatrisation became complete, and the patient was discharged well.

The obvious value of this agent lies in its being fatal to the disease, and powerless over the healthy tissues. The one it destroys, whilst it spares the other; and not only so, but it appears to quicken the healing energies of the latter; for the repairing process keeps pace with the speed with which the former comes under its exterminating influence; so that no sooner is the last vestige of the disease gone, but the wound is almost cicatrised.

In the Guy's Hospital Reports, Mr. Bryant speaks most favourably of excision in these cases; and I can have no doubt whatever of the conclusion to which that very able and observant surgeon has come on this point; but there are circumstances which give to the caustic method a value which excision does not possess, although I do not claim for it greatly preponderating advantages. There is no loss of tissue by this mode; whereas the whole lip is lost by excision. This might be an advantage; for it may relieve the patient of a part of the face very prone to become the seat of cancer; and to which it may return if the diseased growth alone be removed. On the other hand, the advocates of conservative surgery who with the knife very nearly imitate the caustic, aver that this liability is by no means so great as to constitute an argument in favour of the wholesale, against the limited, removal of the lip-structures.

Again, patients often prefer caustic to the knife; although, as far as pain is concerned, it is, I think, saved by excision.

From epithelial cancer, I go to *lupus exedens*.

Although this affection has been too much looked upon as constitutional, and not admitting of cure but through internal remedies, I can affirm, from repeated experience, that it is curable by means of the solution of the pernitrate of mercury.

The first case in which I tested its powers was that of a lad, aged 18, from Walthamstow, the whole side of whose face had become exceedingly unsightly by this affection in a very severe form. I at first limited the application to a small segment of the ulcer, after carefully freeing the surface of scab and moisture. The effect of the first application encouraged me to bring the whole surface as rapidly as possible under its influence. A few dressings, three days apart from each other, and the intermediate use of a weak solution composed of Condy's disinfectant and opium, were sufficient to bring about reparative action in the sore, and ultimately its complete cicatrisation.

A young woman, aged 24, suffered for years from lupus exedens affecting the skin of the face, over the angle of the lower jaw. I first applied the solution about six weeks since; and

have repeated it since about once a week. The sore has cicatrised.

I might give several other cases; but they would be merely repetitions. Suffice it to remark that the remedy does not appear to act in the same manner that it does on epithelial cancer; for it does not destroy the textures with which it comes into contact so suddenly as to produce an eschar. This may, perhaps, be due either to the fact that I have not applied it so vigorously in these, as in the former class of cases; not having found it necessary to do so; or to the greater resistance shown by lupous tissue to the agent; for this tissue differs radically from cancer, in consisting principally of newly formed connective tissue with nucleated cells.

The third form of disease in which I have been in the habit of using this remedy, and that, to a certain extent, satisfactorily, is the *induration of chancre*. I cannot help thinking that the tissue which forms the indurating element differs entirely from that in which it is imbedded. The unaided eye will soon learn to distinguish it by its colour and texture; and sometimes by its slightly overlapping the contiguous healthy tissue; but whether it is altogether a new *quasi*-parasitical growth, or is a vitiation of the natural tissues by which these take on new characters and action, it is difficult to say. At all events, there is diseased structure, and its elements have powers of increase and induration.

There is, unquestionably, much difficulty in ridding parts of this tissue. It will sometimes disappear under a course of mercury, whilst at others it will not. Occasionally, it yields without mercury; whilst again, it will resist a long course of this remedy, remain for months after it has been given up (the ulcer having healed), and then melt away as though spontaneously. I have seen one of two indurated masses disappear, as well as syphilitic tubercles, on one side of the face, under treatment, whilst the other nodule and the tubercles on the opposite side have remained without any change. There is scarcely anything more embarrassing in practice than the seeming caprices of this morbid element. The question is how best to get rid of it, *i. e.*, most speedily and most effectually. I have found the pernitrate of mercury of the greatest value towards attaining this end. And I cannot but think that at least a plausible inference of some practical value may be drawn from comparing the processes by which epithelial cancer and the induration of chancre are made to disappear before the pernitrate topically applied in the one case, and mercury systematically administered in the other.

In both the effects are, to outward appearance, the same, with the exception of the removal of the chancrous tissue,

which is not by masses, as in the case of the cancerous. But this difference does not injuriously affect the analogy; for it may consist simply in that which exists between ulceration and sphacelus; and in this respect the effect of the pernitrate on the chancrous tissue may closely assimilate that which it has upon the tissue of lupus. But, returning from this necessary digression, it may be observed that the effects of the two remedies on the two diseases respectively resemble each other, inasmuch as in both, as the disease yields, so the contiguous tissues make themselves obvious by a ring of healthy redness, which follows close upon the retiring base of the disease, until the latter entirely disappears, and granulation closes up the sore. Does not, then, the mercury as it is brought by the nutritive juices to the comparatively feebly resisting chancre-tissue, act upon it simply as a poisonous agent, destroying it histologically by setting up a species of molecular gangrene; and thus represent the same kind of action as that which is exerted by the pernitrate upon cancerous tissue, only upon a larger scale? And, if so, is not the pernitrate a more ready means of getting rid of the induration than ptyalism? I grant the use of the mercury, both in its curative character, as an adjunct, and as a preventive, so far as constitutional syphilis is concerned, to be most important; but would it not be better, in all cases admitting it, to combine the two? I have repeatedly done so, and with the best effect. But it must be remembered, as the destructive powers of the caustic are made to penetrate deeper and deeper into the chancrous mass, it is not necessary, were it possible, to continue it until the whole of the induration is gone, but only until the wound shews unmistakeable evidence of healing in; for the cicatrix, in these cases, has a peculiar induration which, at least, resembles that of the diseased tissue, and cannot be got rid of.—*British Med. Journal, January* 18, 1862, *p.* 59.

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## 10.—CASES OF CANCER SUCCESSFULLY TREATED WITH THE ARSENICAL MUCILAGE.

By Dr. W. Marsden, Surgeon to the Royal Free and Cancer Hospitals.

[The mere recording of operations for the relief of cancer, seems to be of little or no value, unless sufficient time be given to warrant at least a well-grounded hope that a relapse or return of the malady is not likely to occur. These cases, however, occurred some time ago, and up to the present time there had been no relapse.]

*Case* 1.—Charles M., from Worcestershire, aged 70, was

admitted into the Cancer Hospital, Brompton, on the 13th of October, 1858, and was discharged cured on the 18th of May, 1859. A cancerous ulcerated sore occupies about a half of the lower lip, and the left angle of the mouth. It threatens to proceed upwards towards the cheek and upper lip. It resembles at first sight a warty excrescence, but has a very formidable look; nor can there be a doubt of its malignant character, whatever be the view of pathologists in respect of the true nature of epithelial cancer. The patient had been treated for three months in the Worcester Infirmary. Soon after admission, the arsenical mucilage was applied as a caustic dressing to the parts affected. Under this treatment he rapidly recovered, and continues well to this day.

It may be useful to add, that the disease was of about eighteen months' standing at the time of his admission into the hospital. The arsenical mucilage was first applied on the 10th of Nov., and discontinued on the 16th of December. The progress towards a cure was uninterrupted.

*Case* 2.—S. G., aged 56, married, and had had two children, was admitted as an out-patient of the Cancer Hospital, Piccadilly, on the 15th March, 1859. The history of her case is as follows:—After a fall occurring about a year previously, there appeared to the left of the umbilicus and in the umbilical region a tumour, which, small at first, has now increased to the size of an egg. The tumour is of a deep-red colour, slightly ulcerated over the greater part of its surface. It is firm, and attached to the abdominal walls by a broad base or pedicle. As the means employed seemed to have no influence over the morbid growth, she was recommended to become an in-door patient in the hospital at Brompton. She was accordingly admitted on the 3rd of May, 1859. She enjoys pretty good health, and complains only of a sense of weakness in the limbs. After a few applications of the arsenical mucilage, the tumour sloughed off, leaving a clean surface, which speedily cicatrized, and she was placed on the list of out-patients on the 17th June of the same year. Soon after leaving the hospital this patient lost the use of the lower extremities, but from which she soon recovered. The cicatrix is quite sound, and she continues in good health, and without any relapse, to the present day.

In this case, as in all the others treated in the Cancer Hospital, the application of the arsenical mucilage was rigorously limited to the fungous structure, or, in other terms, to the diseased parts, experience having told me that to extend the application of the medicament to the healthy structures is a proceeding fraught with great danger.

The tumour thus removed is preserved in the Pathological

Museum of the Hospital; it is numbered 56. A correct coloured drawing of the tumour, as it appeared when the patient first entered the hospital, will be found in the folio of pathological drawings forming a portion of the Museum; it is numbered 55.

*Case* 3.—S. F., aged 68, of Calston Colne, was admitted into the Cancer Hospital, Brompton, on Sept. 21st, 1859, for an epithelial cancer (cancroid) of the lower lip, which first appeared about ten months previously. His general health seemed good. The arsenical mucilage was immediately applied twice a-day, and simple soda powders were prescribed to be taken also twice a-day. Under this treatment the fungous growth was speedily thrown off, the secretions from the surface became of a healthy character, and on the 5th of October the black lotion was substituted for the arsenical mucilage. He was discharged cured on the 14th October, 1859, and continues well to this day.

*Case* 4.—M. N., aged 71, was admitted into the Cancer Hospital, Brompton, on the 20th of June, 1860, for a fungous tumour, of the size of a small apple, seemingly growing from the scalp, close to the fronto-parietal suture, and somewhat towards the right side. To this tumour, which appeared to have no cranial or dura-matral attachments, though strongly resembling such tumours, the arsenical mucilage was applied with great caution; and, when the pedicle, which was of considerable breadth, had nearly sloughed through, it was divided with the knife on the 1st of August. No hemorrhage followed. The bone was found bare and denuded of the pericranium for about the extent of a shilling. Granulations of a healthy character spread over the wound, and a healthy cicatrix ultimately formed. A small red spot marks the original situation of the tumour. On the 12th of October last she had continued quite well, nor has the disease re-appeared.

It is right to remark that the growth resembled very strongly those terrible tumours which, growing from the external surface of the dura mater, terminate by perforating the cranium and spreading over the surface of the scalp.

[The author omitted to give the formula of the arsenical mucilage. The following formula is from a short subsequent note on the subject.]

The following is the formula:—Arsenious acid, gum arabic powder, of each one ounce, mixed with five drachms of water. The part affected to be painted over with the mucilage night and morning, never exceeding one superficial inch. As the part becomes deadened, it must be allowed to slough off, aided by the application of a simple warm bread-and-water poultice. When all the diseased part has been thus got rid of by the

repeated application of the mucilage, a carrot poultice should be applied during the night, and a weak black lotion during the day (calomel, one drachm; lime water, one pint), until the part is entirely healed.

*Medical treatment.*—In persons of general good health, bicarbonate of soda, fifteen grains, night and morning; in persons of leuco-phlegmatic habit, one soda powder every night on going to bed, and the following draught twice during the day:—Hydrochloric acid, one drop; compound tincture of cinchona, one drachm and a half; to one ounce and a half of water. Full diet, with malt liquor, I consider to be absolutely necessary, avoiding spirits and tobacco, but wine I recommend to those who are in the habit of taking it.

It is by this mode of treatment I consider such a change is produced in the constitution as to arrest and even destroy a cancerous action, as I have not yet seen a single instance of the disease returning in any of the cases thus treated. There are several cases now under treatment, which can be seen by any medical man who may desire to visit the hospital.—*Lancet, March* 1 *and* 22, 1862, *pp.* 220, 319.

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## 11.—ON ACUPUNCTURE IN THE TREATMENT OF MUSCULAR RHEUMATISM, AND ON GALVANISM IN RHEUMATIC PARALYSIS.

By Dr. Arthur Leared, Physician to the Great Northern Hospital.

The treatment of muscular rheumatism is sometimes so unsatisfactory as to exhaust the patience alike of the sufferer and of his Medical attendant. In the following remarks, I wish to show the efficacy of two powerful remedial agents—acupuncture and galvanism. The latter is at length beginning to claim the attention it deserves; but acupuncture, though employed by that observant and practical people, the Chinese, from immemorial time, has not been fairly tested in our modern practice. It is not my intention to offer any speculation on the *ratio medendi* of this curious mode of treatment—only remarking that it possibly depends on the production of galvanic currents.

Several years ago I was consulted by a lady for rheumatism, the principal seat of which appeared to be the right deltoid muscle. It was attended by considerable loss of power, and the severe and constant pain had seriously impaired the patient's health. Hearing that a number of approved remedies had been employed without effect, it occurred to me to give acupuncture a trial. Three or four needles were deeply inserted in the affected part, and allowed to remain about an hour. The result

was complete cure of the pain, and the full use of the arm was soon recovered.

Many cases apparently of the same sort of rheumatism came under my treatment when I was physician to the Civil Hospital at Smyrna during the late war. Acupuncture was tried in one case, in which pain was also referred to the deltoid muscle, but it seemed to be of no avail. But while I think it right to mention this, it is to be added that there was too often cause to suspect either that no pain really existed, or that its relief was tardily admitted. The harassing duties of the Crimean trenches, from which these patients had recently escaped, made them sometimes unscrupulous in devising means to delay their return to duty.

In the next instance, the details of which I give from my note-book, acupuncture was quite successful.

A gentleman, fifty years of age, and of strong constitution, consulted me January 20, 1860, for rheumatism, contracted, as he believed, from sleeping in a damp bed while travelling. He had for some time suffered severe pain in the right arm and shoulder, but not immediately in the shoulder-joint. It was evident that the deltoid muscle was the part chiefly affected, but pain also extended in the course of the trapezius muscle to the back of the head. Loss of power over the arm had gradually ensued, and was so complete when I first saw him, that with the scapula fixed he was incapable of raising it in the smallest degree. The temperature of the part seemed to be rather below that of the other arm, and sensation was slightly impaired.

I prescribed the iodide of potassium in full doses, and it was continued until its specific effects were experienced, but no benefit resulted. Colchicum was also fairly tried without any benefit. Tonics and sudorifics in succession shared the same fate. In short, with the exception of temporary relief obtained from opiates, rendered necessary by the suffering and loss of rest, no internal treatment appeared to benefit the patient. In the meantime, external applications were not neglected, stimulating and narcotic liniments, containing ammonia, turpentine, tinctures of opium and aconite, &c., were diligently rubbed in. Sulphur was applied to the arm by means of flannel bandage. The effect of heat was tried by means of bags of salt as hot as could be borne, and finally, the firing iron of Dr. Corrigan was freely employed. But the benefit afforded by any of these measures was either so trifling or so transitory that I felt almost in despair about the case.

The signal success which attended the use of acupuncture in the case first mentioned, caused me, however, to suggest it to the patient, who consented to have it tried. I now cautiously

introduced three stout needles into the deltoid muscle until they touched the humerus, at about equal distances from each other, and the needles were left inserted about an hour. Almost immediate and permanent relief was obtained. The patient scarcely complained from that time of any pain in the shoulder or arm, but the paralysis continued as at first. For this state of things galvanism naturally suggested itself. I began with its milder effects, using the ordinary induction apparatus and the intermittent current, while the force of the shocks was gradually increased. The result was perfectly satisfactory; the patient was galvanised on alternate days for about a fortnight, and every application was attended by an improvement, rendered visible by the increased power of raising the arm. On February 29, (at the end of the time above named), he declared himself quite recovered, with the exception of an aching which occurred in the side of the neck when he suddenly moved it, but this comparatively trivial symptom did not leave him for a considerable time. I ascertained very lately that no relapse had taken place, and all unpleasant sensations had long disappeared.

The foregoing successful cases prove the great value of acupuncture, because in them many other remedies had been previously employed without avail, whilst its speedy action indicated its real efficacy.

The potency of galvanism was also shown in one of the cases, but there is sufficient evidence that it usually acts beneficially whenever, as in this instance, the paralysis is due to a peripheral affection of the motor nerves.—*Medical Times and Gazette*, *Nov.* 30, 1861, *p.* 550.

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## 12.–ON THE TREATMENT OF RHEUMATIC FEVER, AND ON THE USE OF ALCOHOL IN SERIOUS CASES OF THIS DISEASE.

By Dr. Lionel S. Beale, F.R.S., Physician to King's College Hospital.

In the London hospitals you have many opportunities of studying the course of serious cases of acute rheumatism. Let me recount very briefly some of the principal points met with in examples of the disease which more frequently come under our notice in the wards of this hospital.

The patients are very generally weak, ill-nourished, overworked, and often under-fed, and insufficiently clad, unhealthy people. They are very pallid. The joint-affection varies much in intensity in different cases. There is generally free sweating, or this is easily induced. Pericarditis often comes on very early in the disease. The quantity of lymph effused on the surface of the pericardium is not very great; but there is a tendency to effusion of serum as well; and in many, effusion into the pleura

also occurs. It is by no means uncommon to find small patches of solid lung; but the pneumonia generally affects the surface of the lung, and is not extensive. Often the inflammation resolves and recurs in different parts of the lung from day to day. The prostration of strength is considerable, and the pulse is, of course, very quick, and generally weak. If delirium occurs, it depends on exhaustion, and usually ceases after the administration of stimulants. In many cases, we have reason to believe that the recurrence of delirium is prevented by the timely administration of support and stimulants. These cases do well on a supporting plan of treatment, combined with the administration of alkalies and opium, which latter drug may be given in comparatively large doses, frequently repeated, without exerting its ordinary action on the system.

Another class of cases, also complicated with pericarditis and pneumonia, is met with; but examples of it are seldom seen in large towns; and in the course of twelve years, I do not remember to have seen more than two or three instances in the wards of our hospital. The patients are comparatively strong, well-nourished, and sometimes florid people. The skin is dry. Fever runs high. The pulse is quick and bounding. The delirium is violent. The quantity of lymph in the pericardium is often enormous; and I believe death may result from the interference with the heart's action thus produced, and the congestion of the lungs which results. I have had very little experience in the treatment of these cases; but I have seen alkalies, various sudorifics, opium, and support, employed in vain. If I were called upon to treat one of these cases now, I would certainly take blood, partly with the view of relieving the congestion of the internal organs, but mainly in the hope of favouring sweating and the action of the kidneys. In fact, in such a case, I believe the right plan of treatment would be to attempt to modify the changes in such a manner as to reduce it to the character of the cases first alluded to.

I propose to confine my remarks on treatment to the first class of cases. Several of these are admitted into our wards every session; and those of you who practise hereafter in large towns will, no doubt, be called upon to treat such cases frequently. They occur among the better class of persons as well as among the poor. Children, students, and young people of both sexes, are principally the subjects of these attacks; but the disease is not exclusively confined to children and persons under thirty or forty years of age.

The question of treatment is very important; and unless you are well acquainted with the course of these cases, and know the probable and possible complications which you may have to treat, and are familiar with the earliest symptoms of these com-

plications, you cannot undertake such a case with justice to the patient, or satisfaction to yourself. Fortunately the symptoms indicative of serious morbid changes are well marked; and, after having carefully watched two or three of these cases, you will ever after be on your guard, and will not fail to note the earliest symptoms of the heart or lungs being attacked, and modify your treatment accordingly. The *immediate* danger in such cases results from the great liability to acute inflammation of the pericardium, the pleura, and the lungs; but, supposing the patient to recover from the attack, he may not be as healthy as before, for in too many instances the pericarditis is followed by an alteration in the condition of the valves of the heart. Regurgitant disease of the mitral orifice very commonly results. I have, however, known some instances in which this affection hardly seems to have influenced the duration of life. But among the poor, and people who are compelled to work hard, so that the gradual accommodation which naturally takes place, under the altered condition of the heart's action, in the organs of respiration and circulation is interfered with, you generally find that the breathing becomes permanently affected; enlargement of the right side of the heart, with weakening of the right ventricle, results; and attacks of general dropsy add to the patient's distress. The case often terminates fatally a few years after the heart affection began.—*British Med. Journal, Jan.* 25, 1862, *p.* 81.

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13.—*Indian Remedy for Small-pox.* By Dr. M'William.—[It is well known variola carries off large numbers of the North American Indians. During a late epidemic the Indians took a remedy given them by an old squaw, and which was held amongst them to be infallible. Compared to it, the remedies given by the white doctors were considered "no good." From the information gathered from the Indians the following observations have been carefully sifted.]

1. In the case of an individual suspected to be under the influence of small-pox, but with no distinct eruption upon him, a large wineglassful of an infusion of the root of the plant "Sarracenia purpurea," or pitcher plant, is to be taken. The effect of this dose is to bring out the eruption. After a second and third dose, given at intervals of from four to six hours, the pustules subside, apparently losing their vitality. The patient feels better at the end of each dose, and, in the graphic expression of the Micmac, "knows there is great change within him at once."

2. In a subject already covered with the eruption of small-pox in the early stage, a dose or two will dissipate the pustules

and subdue the febrile symptoms; the urine, from being scanty and high coloured, becomes pale and abundant; whilst from the first dose the feelings of the patient assure him that "the medicine is killing the disease." Under the influence of the remedy, in three or four days the prominent features of the constitutional disturbance subside, although, as a precautionary measure, the sick person is kept in camp until the ninth day. No marks of the eruption (as regards pitting, &c.) have been left in cases examined that were treated by the remedy.

3. With regard to the medicine acting (as is believed by the Indians) in the way of a preventive in those exposed to the infection, it is curious to note that in the camps where the remedy has been used the people keep a weak infusion of the plant constantly prepared, and take a dose occasionally during the day, so as to "keep the antidote in the blood."—*Lancet*, *Dec.* 7, 1861, *p.* 550.

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## 14.—ON ANÆMIA.

By Dr. Thomas K. Chambers, Fellow and Censor of the College of Physicians, Physician to St. Mary's Hospital, &c.

[Anæmia, or "bloodlessness," means in scientific language a deficiency of red discs in the blood. The word has been objected to as not being strictly correct; and "Spanæmia," or "thinness of blood," has been proposed in its stead. Neither, however, is this strictly accurate, as thinness of the circulating fluid, and deficiency of red globules, are not necessarily co-existent. In reality there is no occasion for fault finding.]

Anæmia, without obvious organic lesion, when properly treated, is a very curable condition, and this should still further reassure you, that you miss nothing by not being able to study its post-mortem pathology. For transitory and curable states leave but little foot-prints behind them for morbid anatomists. In a great majority of cases they depend upon the mucous membrane, of all the tissues in the body the one most affected by mortuary changes.

To the mucous membranes I am disposed to attribute the condition in which we find our present patient. The two circumstances to which I have traced the illness both act directly or indirectly on this tissue. The mental exertion involved in an unusual responsibility thrown on a conscientious person would arrest the action of the involuntary muscles which carry along the mass of food through the alimentary canal. You know well the time your food is in leaving the stomach if you are called to an important midwifery case just after a hearty meal; and several commercial and literary men have complained

to me of attacks of vomiting (that is, temporary paralysis of the stomach), when they took dinner alone, and so were apt to let the mind dwell deeply on some interesting subject; and they have told me in wonder that they could dine out and eat and drink all sorts of rich things with impunity. They did not seem aware of the physiological value of frivolous conversation. At the same time that the moral causes thus impeded digestion, the unwholesomeness of the air in the close shop poisoned the mucous membranes, diminishing their vitality and causing them to be abnormally covered with a thick layer of mucus. Remember that, in spite of their name, it is not the business of mucous membranes to secrete mucus; the more perfect is their condition, the more favourable are the surrounding circumstances, the less they do so. From many persons' lungs not a drachm of expectoration is thrown up in a month, and the vast surfaces of the intestines and bladder are equally innocent of even microscopic traces of mucus in the typical health we desire to experience. It is only when the presence of some material agent diminishes their vitality that the mucous membranes exhibit on their surfaces that peculiar substance whence they take their appellation. And the greater the diminution of life, the greater the secretion; a slight cold in the head will be accompanied by slight catarrh, a severe one by excessive catarrh; and the nearer the approach to death, the nearer it is, so that the death rattle, or overpowering collection of mucus in the bronchi, is a popular warning that all is over. Be careful not to look upon mucous secretion as augmented life; it is in fact a partial death.

Well the poisoning air having covered these slowly moving mucous membranes with a thick tenacious coat, the entrance of alimentary substances into the veins and absorbents was impeded, and our patient starved in the midst of plenty. So all the usual signs of starvation followed. First, hunger,—by no means a constant accompaniment of chronic deprivation of food, yet sometimes present as here; then anorexia, a much more frequent phenomenon; then paleness, languor, weariness, and pain in the stomach; then anasarca, and, in short, the other more marked symptoms of anæmia.

You may observe that the loss in these constituents of the body, which are of a nitrogenous chemical composition, is more marked than that in the hydrocarbonaceous fat. The reason is, partly, that the destruction of adipose vesicles is somewhat concealed by the saturation of the tissue with serum, which gives it a false plumpness—partly, that fat, being absorbable without much, if any, alteration, is easier taken up than fibrin or albumen which require a chemical solution before they can be absorbed. So that though starved, our patient looks but little emaciated.

All that I have said before, of course has for its end the treatment. My aim in anæmia is to introduce as quickly as I can the largest possible amount of 1, nitrogenous food; 2, iron; 3, chlorine. When I say "introduce" I do not mean "throw in," or get swallowed, but assimilated in the system.

As regards the first, it is obvious that if I had written down ever so many "ordinary diets," a patient to whom the very sight of food was an abomination, would have gained nothing by it; she would simply have gone without. I directed therefore, no meals at all, and no solid food, but a cup of milk with some lime-water in it, to be given as medicine every two hours, and a pint of beef-tea in small, divided doses during the day. After two days she managed an egg also daily, and after twelve days of gradual additions of this sort, you will find her on full allowance of mutton chop, porter, beef-tea, and milk.

Iron is required to supply the new growth of red discs which we hope for, with their metallic constituent. You cannot get it into the system in any way so quickly as the mistura ferri composita of the London Pharmacopœia. Large doses of the more soluble salts have an action on the mucous membranes which not only prevents them being taken up, but also arrests the digestion of food. Evidence of the latter is found in loss of appetite and feverishness, and of their own rejection in the blackening of the stools much sooner than by the form I have approved of. So in spite of the elegant preparations which are constantly put before us, as recommended by their solubility, such as the chloride, acetate, citrate, phosphate and other salts of iron, I prefer the unchemical mixture. It seems as if the carbonate which is preserved from decomposition by the sugar, and the finely-divided oxides diffused through the thick liquid were peculiarly easy of solution in the water saturated with salts and carbonic acid, which (and not pure water) we must remember is the solvent to be considered.

I have found that some cases which did not improve so quickly as I could wish under the above treatment, made a sudden start of improvement when to it was added the administration of chlorine in the form of warm hydrochloric acid baths. More iron is taken up,—the blackening of the fæces ceases, and therefore perhaps it may be that the presence of more acid in the system attracts more of the metal. But in a few cases I tried for experiment the hydrochloric acid baths alone, and even then it was beneficial, seeming to confer muscular strength like what are commonly called tonic drugs. I cannot but think, therefore, that it supplies a distinct want in the system, that it is a directly restorative medicine in anæmia.

Nor is it difficult to make this empirical observation accord with rational pathology. In anæmia the blood is more watery

than natural; the proportion is deficient, not only of organic matters, but of salts. Chloride of sodium is the most important of these, and the supply of one of the constituents of this material we may reasonably imagine is an aid to the renewal of life, which is the end of all medication.

Besides the above-named medicines, you will see, I have ordered Pil. aloes cum myrrhâ, gr. iv. omni nocte sumenda. Now, do not suppose that this is ordered merely as a purgative, and that any other purgative would do as well. On the contrary, most purgatives do harm in anæmia. Gamboge, castor-oil, sulphate of magnesia, colocynth, mercury, and several others, which produce serous elimination and augment secretion generally, would do harm just in proportion to their activity. It seems established by the experiment of making them act as purgatives when injected into the circulation, that their soluble principles have a destructive agency over the blood; whereas the soluble alkaloid in aloes (aloine) is, in fact, a bitter tonic, and the purgative powder of the drug resides in its insoluble resin. Its action is very slightly eliminative—in moderate doses it only slightly augments the solid brown excreta of the colonic glands, and produces fæces feculent in smell and of consistent form; whilst at the same time it restrains, by its bracing bitter, the formation of mucus, as you may clearly see by its action on moist piles, how it dries them up and makes them smart. And by the more vigorous peristaltic action and by the solid mass passed along the gut, the already existing mucus is cleared away. Aloes, therefore, is employed strictly as a clearer of the intestinal, especially of the colonic, membrane. It is joined with myrrh, partly to divide it minutely, and make a small dose go farther, and partly to get the advantage of the extra resin.

November 28. A fortnight ago I lectured about an anæmic patient. She was then showing a tendency to lose her title to the name, and now she certainly cannot claim it, and has earned our confidence in the statement that her natural hue is rosy. She leaves the Hospital to-day, having manufactured enough red discs to colour her blood throughout very sufficiently.

What amount of manufacturing industry does this show? Let us reckon. She weighs 8 stone, or 1792 ounces; of this $\frac{2}{7}$ths, or 512 ounces is blood; and of this blood $\frac{133}{1000}$, that is to say, 60 ounces, should be red globules. Now the analyses of MM. Andral and Gavarret show that in cases of anæmia of at all a marked character (as this was), we may expect, at least, three-quarters of the red discs to disappear, so that when she came into the hospital it may be fairly assumed that she did not possess above 15 ounces; and now I think with equal fairness she may be assumed to have got up to 45, which is conced-

ing that she still wants a quarter of perfect health. By this reckoning she must have made 20 ounces of red blood-discs; that is, the most important organic constituent of upwards of 150 ounces of blood, in a month!

Mark the power of renewal which the human body has under favourable circumstances, and learn from this not only the curability of anæmia when it is a disease, but also the facility of repairing artificial loss of blood when it is employed as a remedy. It has been the fashion lately among certain medical declaimers to paint the physician who draws ten or twelve ounces of blood from the arm as a deadly villain, who necessarily *ex vi termini* takes away "the life," or that which cannot be replaced. Not only pill-dealers and quacks have raised this outcry, but it has been joined in by some whose knowledge of physiology ought to have taught them better. It ought to have taught them the fallacy of the popular notion, and the scientific argument by which to refute it. You will clearly perceive from the calculations through which I have taken you that by proper management no loss is so easily repaired, and that if he saves his patient two nights' sleeplessness or pain, the price of a venæsection is well spent.

Only note this, that *if the loss is to be repaired, the means of repair must be given.* When I bleed, you will observe that I take down the diet card and accommodate it to the circumstances, being very careful that the patient has the wherewithal to replace the globules I am detracting. I supply with one hand what I am taking away with the other. I begin to cure the artificial anæmia, which I feel myself called upon to produce, at the same time that I am producing it. "Blowing hot and cold" you will say. Precisely so—that is what I intend. I blow cold with my bleeding, not for the sake of blowing cold, but because it is the inevitable accompaniment of the remedy. I employ the remedy not to produce anæmia, but for other quite different purposes which I think are worth the cost. And I blow hot to compensate as well as I can for the evil I think it desirable to do, on the principle

"Necesse est facere sumptum, qui quærit lucrum."

I do believe that the sad effects of the excessive venæsection of our fathers, which with justice have been thrown in the teeth of the medical profession, was due quite as much to the starvation as the bleeding. I have a most vivid and painful recollection of seeing, when I was a student in Paris, M. Chomel and others treating pneumonia. I could not at first understand why in France so much more marked, and, in my opinion, so much more deleterious effects were produced by the venæsection than in England. At that period we had at home ample opportunities of

seeing blood-letting practised; but I never saw such prostration produced by it at St. George's as I did at the Hôtel Dieu. Then I noticed that the order for "*Saignée*" was accompanied by "*Diete absolue.*" I almost doubted my knowledge of French, and was obliged to ask several of the bystanders before I could believe that this meant an *utter deprivation of all food!* There was an instantaneous explanation of the comparative toughness of my countrymen; for never in our worst days did we carry the Sangrado practice so far as that. We did not give food enough, perhaps, but we never commanded that it should be intentionally kept out of our patients' way.

The bad practice of starving and bleeding at the same time, took its rise from the errors of Allopathy. In this system a disease is an enemy to be overcome—a something *to be combated by* an agent which is as opposite to it as possible. Bleeding was found by experience to be useful in certain morbid states; therefore it was useful in virtue of its opposite effects. Anæmia and depression of life, are the most constant effects of bleeding; therefore anæmia and depression are the benefactors to be sought for, and whatever aids blood-letting in producing anæmia and depression, is a good companion to it. It is unnecessary to say, that of course starvation was the first agent thought of, adopted *a l' outrance* by the logical French, and with more hesitation by our fortunately illogical countrymen. The abuse has brought about a reaction; and that treatment which was considered at one time so specific that its gravest faults were viewed as virtues, now runs a risk of being denied *all* virtue because of its avoidable faults.—*Medical Times and Gazette, Jan.* 11, 1862, *p.* 26.

## DISEASES OF THE NERVOUS SYSTEM.

### 15.—ON THE PHYSIOLOGICAL AND MEDICINAL PROPERTIES OF SULPHATE OF ANILINE; AND ITS USE IN THE TREATMENT OF CHOREA.

By Dr. James Turnbull, Physician to the Liverpool Royal Infirmary.

[The artificial alkaloids constitute a numerous class, and from their resemblance to the vegetable alkaloids in chemical constitution, we should expect them to produce powerful, and we must hope, good effects on the animal economy. This, however, remains to be settled by future experiment. Aniline is one of the best known of the artificial alkaloids.]

Aniline is a volatile oily alkaloid which forms crystallizable salts with most of the acids. To the chemist it is a very inter-

esting body, as it forms numerous compounds with other bodies, and its radicle, phenyle, connects it not only with indigo, and its derivatives, but also with carbolic acid, which is the hydrated oxide of phenyle, and with benzoyle and salicyle. There are various processes by which it may be obtained. From indigo it may be obtained by distilling it alone, or with potass; or it may be obtained by heating isatine with potass. It is also present in coal-tar, from which it is now extensively prepared for the purpose of forming certain dyes.

Two circumstances led me to make trial of aniline as a medicinal agent—the fact of its being an alkaloid, from which I inferred that it would act energetically on the animal economy, and, probably, on the nervous system, and the fact of its being present in Dippel's animal oil—an old anti-spasmodic remedy. This oil, Pereira tells us, is undoubtedly a very powerful agent. Swallowed in moderate doses, it stimulates the vascular and nervous systems, and is esteemed anti-spasmodic. It has been used, he states, in hysteria and other affections of the nervous system accompanied with convulsive movements. There are other alkaloids in this oil—pyridine, picoline, lutidine, and collidine—to which its properties may be equally due; but the fact of aniline being the chief of them was one of the reasons that led me to make a trial of the sulphate of this artificial alkaloid.

Chorea is a peculiar convulsive affection of the nervous system, which yields, in the majority of cases, to the means which medical men ordinarily use for the treatment of this disease. Very obstinate cases are, however, occasionally met with which resist all the known means; and an extremely severe one came under my care, where all the usual remedies failed to produce the slightest benefit, and as the disease seemed likely to exhaust the patient, I considered it a fair one to make my first trial of sulphate of aniline. The patient began rapidly to improve, and as she recovered perfectly, I was induced to try it in other cases in which it has proved likewise successful; and I now proceed to give a brief account of six cases :—

*Case* 1.—*Chorea, with very violent twitching movements, loss of speech, &c.; unsuccessful treatment by purgatives, steel, sulphate of zinc, cod-liver oil, shower-bath, &c.; rapid recovery by means of sulphate of aniline.*—Ann P., a girl aged thirteen, was admitted into the Liverpool Royal Infirmary under my care on the 7th of June, 1860, on account of the usual involuntary twitching movements which characterize St. Vitus's dance, and which affected all the limbs. She had been ill for three months. She was first treated with purgatives, and then successively with iodide of iron, cod-liver oil, the shower-bath, which is often of great service, and lastly, with the sulphate of zinc. None of these

remedies, however, appeared to be of any use. On the contrary, she got worse, and the violence of the convulsive movements became so great, that she was confined to her bed, in which it was a difficult matter to fasten her. She also lost the control of the muscles of the tongue so completely that she was unable to speak. On the 6th of August, two months after admission, and five from the commencement of her illness, the movements had become so constant, tossing her about in all directions, that they threatened to exhaust the vital powers, as sometimes happens in this singular disease, and I thought the case, therefore, a fit one, after having used the ordinary means, to make trial of a new remedy. One grain of the sulphate of aniline was ordered to be taken in solution, with a little sulphuric acid, three times a day. In three days there was a decided diminution in the violence of the movements, and afterwards a gradual improvement. The dose was increased to two grains, and it then caused some depression and a peculiar blueness of the lips, which I have since remarked in several other cases. The medicine was omitted for two days, and resumed in the smaller dose. On the 30th of August she had so far recovered, that she could walk well. She had also regained the control of the muscles of the tongue, so that she could put it out, and she had recovered her power of speech. On the 10th of September she had entire control of the limbs. They were almost perfectly still, and she was considered cured.

The successful result in this case led me to give it in the next, which was not, however, one of such unusual obstinacy and severity.

*Case 2.—Chorea affecting the left side chiefly; treatment by purgatives and sulphate of aniline; perfect recovery in twenty-one days.* —Mary Ann H., a rather delicate-looking young woman, aged 18, was admitted on the 30th of August, while the previous case was under treatment. She had the movements in all the limbs, but the left side was most affected. She had not menstruated for twelve months, and the bowels were constipated. They were first opened freely by compound jalap powder and calomel, and then a grain of sulphate of aniline was ordered to be taken three times a day. It was afterwards increased to one grain and a half. She recovered rapidly, and the same blue appearance of the lips was developed which had been remarked in the preceding case. On the 20th September she had scarcely any involuntary movement, and she was so well, and her hands so steady, that she could knit crotchet-work. The catamenia being, however, still absent, decoction of aloes, with steel mixture, was prescribed instead of sulphate of aniline, and she became an out-patient.

*Case* 3.—*Chorea with twitching movements in the face and limbs, brought on by a fright; treatment by sulphate of aniline, and recovery in fourteen days* —Martha G., a healthy-looking girl, 17 years of age, residing at Birkenhead, was admitted Dec. 20th, 1860, with very violent twitching movements in all the limbs as well as the face. A month previous she had a fright, which brought on the involuntary twitching at first in the right side. She had been under medical treatment from the commencement of the attack, but had notwithstanding been getting gradually worse. All the functions were natural, the bowels and the catamenia being regular. A grain of sulphate of aniline was ordered thrice a day, as in the previous cases. On the 24th there was less motion, and the dose was increased to two grains. The movements gradually subsided, and on the 3rd of January she had resumed the use of her needle. She then wished to go out, considering herself quite well.

*Case* 4.—*Chorea affecting the arms, legs, and muscles of the face; treatment by purgatives and sulphate of aniline; recovery.*—Margaret M'C., a stout healthy-looking girl, aged 11, was admitted on the 27th of April, 1861, with twitching movements in nearly all the voluntary muscles. She had been ill ten days, but had also had a very severe attack about two years previous, for which she had been treated in the infirmary. The sulphate of aniline was prescribed in the dose of a grain and a half three times a day. The symptoms did not diminish at first, and on the 5th of May the movements were very violent and uncontrollable, and she was in bed. A purgative powder was ordered. The following day the lips, the face, and even the hands were of a deeper blue colour than I have observed in any other case. This had arisen from double the proper dose having by mistake been administered. There was a diminution, however, in the movements, and she was out of bed and running about. The movements gradually subsided, and on the 6th of June there was scarcely any jerking.

*Case* 5.—*Chorea with the usual symptoms; treatment with sulphate of aniline and a purgative; recovery.*—Mary Jane W., aged 13, was admitted on the 21st of May, 1861, with jerking movements affecting chiefly the right arm and leg. She had been ill three months, and had suffered from a similar attack, for which she had been under my care two years before. She was healthy-looking, but the muscular tissue was soft. The tongue was not clean. A purgative powder, with scammony, rhubarb, calomel, and sulphate of potass, was ordered. Two days afterwards the movements had not subsided, though the bowels had been freely opened. Sulphate of aniline was ordered in the dose of one grain and a half three times a day. Under this treatment the

movements gradually subsided, and on the 6th of June there was scarcely any twitching. On the 21st she was discharged quite cured.

*Case* 6.—*Chorea with convulsive movements and partial loss of power in the lower limbs; inability to speak; rapid recovery under treatment with sulphate of aniline.*—Elizabeth L., aged 16, a thin and rather delicate girl, was admitted on the 22nd April, 1861. The case illustrated the connexion between chorea and rheumatism, for she had suffered from a severe attack of rheumatic fever eight months previous. She had begun six weeks before admission to have involuntary movements in the legs, and during all that time she had been under treatment at a dispensary. She had got gradually worse, however, so much so that she was carried into the infirmary, having lost the power of the limbs so completely that she was unable to stand. She had twitching movements in the legs, as well as the arms, and the face was also very much affected. When she attempted to speak, a peculiar chucking sound was produced, and she could scarcely say "Yes" or "No." The tongue was not quite clean, but the bowels were regular; the pulse was 100. One grain and a half of sulphate of aniline was prescribed three times a day, and a dose of compound jalap powder and calomel. On the 24th she was considerably better, and able to speak distinctly. On the 29th she was able to walk out, and the involuntary movements had greatly subsided. On the 9th of May the movements had almost entirely left her, and she might have been discharged if it had not been considered desirable to retain her in order that her general health might be improved by good diet and porter, so as to prevent relapse. On the 20th there was scarcely any trace of the original complaint, but she had some rheumatic pain and swelling in one foot and wrist. Quinine with iron was ordered for this, and under this treatment she got quite well.

Sulphate of aniline has been given in two other cases which have come under my observation. One was a case under the care of my colleague, Dr. Inman, where it produced a decided beneficial effect; but the supply of the drug having run short, the cure was completed by other means. The other was a case under the care of my colleague, Dr. Vose. In this case a slow but perfect cure was effected by the remedy.

The beneficial effects of sulphate of aniline have been most apparent in severe cases of St. Vitus's dance, and the first and the sixth that I have detailed were as bad cases as any I have met with where recovery has taken place. The other were cases such as usually yield to the ordinary means at present in the hands of the profession. Chorea is a disease which is generally amenable to the means of treatment we at present possess.

Obstinate cases, however, occasionally occur where the disease yields only very slowly, or even baffles our treatment altogether. I have seen it prove fatal in more than one case, and Dr. Hughes, in his "Digest of Cases of Chorea," published in Guy's Hospital Reports, has recorded sixteen fatal cases. The introduction, therefore, of a new remedy, which appears to have a more direct and powerful influence on the disease than any we at present possess, is calculated to be of use, and I trust that it will be found worthy of the attention of the profession. It seems not improbable that it may prove a remedy of utility in other nervous affections. I have tried it in several cases of epilepsy, and in two cases it seemed to be of service; but I have not given it a sufficient trial to enable me to recommend it confidently in any other disease but St. Vitus's dance.

We know but little of the *modus operandi* of many of our remedies, and I am not prepared to give any explanation of how sulphate of aniline cures chorea. I have, however, some observations to make on its physiological action, from which we may infer that it has a direct influence on the nervous system; and also on the remarkable temporary change in the colour of the lips and skin which it produced in most of the cases narrated.

*Physiological action of Aniline.*—As we know that the alkaloids and their salts are almost identical in their effects, we can scarcely doubt that the physiological action of aniline and that of the sulphate are the same or very nearly so. Gmelin states that half a gramme of aniline introduced, together with a gramme and a half of water, into the stomach of a rabbit, caused strong clonic cramps, then laborious breathing, loss of strength, dilated pupils, and inflammation of the mucous membrane of the mouth.

Dr. Schuchardt arrived at the following results from a series of experiments:—Aniline may act injuriously on the animal organism, and in large doses may even cause death. Frogs introduced into a weak solution containing aniline died in periods varying from a quarter of an hour to two hours and a half, and death was also caused by the introduction of aniline into the mouth or into a wound in the back. Rabbits were also poisoned by this substance, a small animal being killed by fifty drops in six hours and a quarter, and a larger one by a hundred drops in four hours. In all the animals experimented upon, violent clonic and tonic spasms ensued after the application of the aniline, and continued almost uninterruptedly till death. There was also loss of sensibility, commencing at the lower extremities and extending to the upper; the temperature of the body was also reduced. Wherever the aniline was applied locally, as in a wound of the back, on the stomach, on the pos-

erior part of the tongue, or on the conjunctiva, appearances of ritation were observed, which are probably connected with the ower possessed by aniline of coagulating albumen. The aniline as never detected in the urine, and it is probable that this ubstance is eliminated from the body rather by the organs of espiration than by the kidneys.

I gave to a dog about three months old half a drachm of the ulphate of aniline, and the effects produced corresponded in nany respects with those observed by Dr. Schuchardt. About wo hours and a half after it was given, the animal vomited, nd an hour later it was purged. It became dull, weak, and remulous; the pulse became very rapid; the pulsations of the eart were counted 148 in a minute, and the breathing was omewhat laboured. The feet were cold, the tongue of a blue olour, and the hind legs almost paralysed. Five hours after, was very weak, but recovering, and the next day it had recov-red appetite and liveliness.

The sulphate of aniline does not seem to have the same local ritating effect that the aniline itself produces. My own obser-ation would lead me to believe that it has a direct action on ne nervous system. The most striking effect, however, which produces is the visible alteration in the colour of the lips and omplexion. A peculiar blueness of the lips, the tongue, and ne nails, and a dusky appearance of the complexion, have been bserved in a greater or less degree in most of the cases where a ufficient dose has been taken continuously for any considerable me. It is a temporary effect which has always gone off within wenty-four hours when the remedy has been omitted. In one ase, where an overdose of not more than three or four grains as taken, the blueness in the hands extended above the wrists. here has been some depression and headache in some of these ases, which symptoms have, however, gone off when the medi-ne has been discontinued. The blue appearance, though like nat which occurs in chronic bronchitis, does not seem to arise rom any interference with the respiratory function. This hange of colour is more interesting from the fact, that we have ew examples of parallel effects resulting from the exhibition of edicinal agents. The permanent discoloration of the skin hich sometimes arises from the long continued exhibition of itrate of silver is scarcely a parallel case, for here the oxide of lver is deposited in the skin from the remedy being decom-osed by the action of the light; whereas the blueness from the ulphate of aniline appears to arise from a colouring matter eing formed in the blood, which is most visible in parts like ne lips where there is a thin mucous covering. The effect of adder-root (which is used as a dye) in colouring the bones of nimals fed upon it of a red colour is more nearly a parallel

case; but the effect of the carbazotic acid and its salts—which are of a deep yellow colour, and produce a similar colour of the skin, as if the individual were artificially jaundiced—is the example which most nearly resembles that of the colouring influence of sulphate of aniline. This power which carbazotic acid has of colouring yellow, not only the tissues but also the fluids of the body, was discovered by my friend Dr. Moffat; and it is worthy of observation that both aniline and carbazotic acid are derivatives from the radicle phenyle.

If the blue colour produced by sulphate of aniline does not arise from any interference with respiration, we have to inquire from what other cause it may arise. I believe it is from the sulphate of aniline being oxidized in the blood, and producing in it a blue dye. Gmelin states a fact which seems to prove this,—namely, that when aqueous sulphate of aniline is boiled with peroxide of lead, an oxidizing agent, carbolic acid, is evolved, and a blue liquid produced which smells of formic acid and afterwards becomes colourless, and gives off ammonia when heated with potass. Aniline, it has also been stated, is a derivative from indigo; and it has relations to many other dyes, the mauve dye being made from the sulphate of aniline by oxidizing it with bichromate of potass. It is, therefore, probable that the temporary blueness arises from a colouring matter, or dye, being formed from oxidation of the aniline in the blood.

Since this paper was read before the meeting of the British Association for the Advancement of Science at Manchester, I have received many inquiries, not only in regard to the employment of the remedy in cases of chorea, some of which had been obstinate and of long standing, but also as to how far it might be adapted for the treatment of other nervous affections, more particularly epilepsy, shaking palsy, nervous irritation with jerking of the head, spasmodic asthma, catalepsy, &c. Time and opportunity of administering a remedy in suitable cases are required, in order to reply to such inquiries, and at present I am only prepared to state that I consider, from its action on the nervous system, that it is worthy of trial in chronic nervous affections of spasmodic or convulsive nature. Having now, however, opportunities of knowing the results of its administration in many cases more or less allied to chorea, I may be able, at a future time, to give some information as to its utility in other nervous diseases. Epilepsy is one of those intractable diseases in which it is especially worthy of trial, and I have already alluded to two cases in which it was prescribed with decided benefit. I was consulted by letter in regard to a case of nervous irritation of the head, with frequent jerking, where the remedy was taken with great benefit; and since this communication was written, I have treated other cases of chorea with

results so similar to those already given, that it is not necessary to extend this paper by alluding to them at greater length. As shaking palsy is a disease in which there is probably always more or less alteration of structure, we should not expect that sulphate of aniline would be of any service in this disease, or in any other nervous affection arising from an organic change in the substance of the brain or the spinal cord.—*Lancet*, *Nov.* 16, 1861, *p.* 469.

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## 16.—CASES OF CHOREA TREATED BY SULPHATE OF ANILINE.

Under the care of Dr. FRASER, at the London Hospital.

*Case* 1.—J. W., aged 14, admitted on January 7, 1862, with a mild attack of acute rheumatism. The alkaline treatment was adopted; and in a few days the patient had just got rid of his pains, when one morning he was suddenly seized with twitching of the left side, affecting both the arm and leg. On the following day hemichorea was fairly established. Sulphate of aniline, in doses commencing at a quarter-grain, and going up to seven grains three times a-day, was prescribed; in twenty-three days 284½ grains were taken. The mauve colour of the lips became first apparent when the patient was taking three grains three times a-day. As the patient did not appear to derive any benefit from the sulphate of aniline, arsenic was ordered, under which treatment the patient became rapidly better. He is now quite steady, and though still weak, may be considered cured. This patient, whilst taking the aniline, did not complain of any pain in the head; an agreeable sensation of warmth at the epigastrium being all that he noticed. It may be remarked here that the colouring of the lips, from the administration of aniline, is of a much lighter tint than the cyanotic hue caused by venous congestion. Whilst the mucous membrane in this case was of a fine mauve tint, a few drachms of blood were drawn for experimental purposes: to the naked eye the colour of the blood appeared deficient in brilliancy, and of a somewhat lighter shade than some blood drawn from a patient not taking the aniline. Under the microscope there was no alteration in the character of the globules.

*Case* 2.—J. H., aged 19, was admitted on January 9, with severe chorea. The disease was of four months' duration, and affected both sides of the body; the features were much distorted in articulation, and the speech was now stammering. Deafness was present, and he complained of pain in the head. Whilst walking, the patient was constantly seized with sudden clonic spasms of the lower extremities, more especially of the anterior tibial muscles, by which he was thrown forwards on his toes;

and whilst sitting, the scapulæ were elevated and the spine suddenly extended by similar spasmodic contractions of other muscles. Chorea electrica would well describe the character of the disease, if that name had not been applied by Dubini to a complaint of a somewhat different nature. This patient was ordered half a grain of the sulphate of aniline with five drops of dilute sulphuric acid three times a-day. The dose was gradually increased, so that on January 30, the patient was taking seven grains three times a-day: he continued taking twenty-eight grains daily for ten days without any improvement. Under these circumstances, on February 10, the sulphate of aniline was discontinued, and the arsenical treatment adopted. His condition is now much improved, and since he was put upon the arsenical plan of treatment he has become considerably steadier, the electrical contraction of the muscles being rarer and less violent. In thirty-four days this patient took 406¾ grains of the sulphate of aniline, and during the last fortnight, whilst he was taking the drug, the deafness and buzzing in the ears were greatly aggravated; he also complained of pain in the frontal region, which reached its acme about an hour after taking a dose. The lips and mucous membrane of the mouth became tinged of a dull mauve colour, when the patient was taking two grains of the sulphate three times a-day; and the colour became deeper as the dose was increased.

[Three other cases are also related. Dr. Fraser then makes the following clinical remarks:]

These cases are not sufficient to warrant a general deduction as to treatment; the result nevertheless points to the inefficacy of the sulphate of aniline in five cases, and is, therefore, *pro tanto*, a clinical fact to be noted. The theory for the employment of aniline in cases of chorea may be founded upon this physiological fact, determined by experiments now being conducted by Dr. Letheby in the Laboratory of the London Hospital Medical College, that upon the administration of aniline to dogs, rabbits, &c., the functions of the brain proper are arrested, while those of the spinal marrow are highly exalted; as demonstrated by the extraordinary clonic spasms at the time when the animal is entirely deprived of ordinary sensation and voluntary muscular action; for example, a dog under the influence of ℥j. of aniline will remain for three or four hours comatose, while the limbs are in a state of constant motion, as if in the act of running. Hence it might be inferred that the abnormal muscular movements in chorea may, by the action of the aniline, be arrested, and give place to the normal voluntary movements; but so far as these cases go there has been a signal failure. A curious chemical question arises from the fact of the characteristic mauve hue

being produced on the lips and buccal membranes. The production of the mauve colour from aniline is proved by the published results of Dr. Letheby to depend upon oxidation, and he has shown also (vide Chemical News, Feb. 15), by means of the oxygen from the positive pole of a galvanic battery, that aniline is changed into mauve. It would seem, therefore, that aniline, while circulating in the system, receives oxygen from some source, and acquires its mauve colour.—*Med. Times and Gazette, March* 8, 1862, *p.* 239.

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## 17.—CASES OF SEVERE NEURALGIA TREATED BY VALERIANATE OF AMMONIA.

Under the care of Dr. O'Connor, at the Royal Free Hospital.

The following cases of neuralgia, extracted from the case-book of Dr. O'Connor, are representatives of a large class of a similar character which have come under his care. They illustrate the success attending the use of the valerianate of ammonia as a remedy in the severer forms of this malady. Dr. O'Connor informs us that this drug, if retained in a state of crystallization, rapidly decomposes, and is uncertain in its action. It should be kept in solution, and the smallest dose he is in the habit of giving of the latter is equal to twenty grains of the crystal.

*Case* 1.—J. R., a man aged 46 years, a porter, unmarried, was admitted Nov. 9th, complaining of excruciating pain in the right side of the face, commencing near the malar bone, from thence extending to the nose, over the whole of the upper, and then to the lower jaw. He has been subject to the pain for ten years; it is generally most severe about eight o'clock at night, but he is never totally free from it. For the last week it has been most excruciating, and he has had scarcely any sleep. He has been under the care of many medical men, and sought advice at various institutions, without benefit. Dr. O'Connor ordered him a dose of compound powder of jalap to be taken directly, and a draught of three drachms of Bastick's solution of the valerianate of ammonia in infusion of calumba every three hours.

On Nov. 16th he again presented himself at the hospital, when he said that after taking two doses of the medicine the pain was considerably relieved, and that he had no occasion to have recourse to the remedy after the sixth dose. He is now well and free from pain.

*Case* 2.—P. B., a married woman, aged 31, admitted same day as the foregoing; has two children. For a number of years she has been subject to attacks of neuralgia, which come on generally

about five o'clock of an afternoon and continue with great severity for five hours. The pain seizes her first behind the right ear, extends to the nape of the neck and back of the head, and frequently shoots with great rapidity along to the malar bone, then to the lower jaw; and she is suddenly seized with pain at the region of the heart. She is suffering from aortic valvular disease. At times the pains are so severe that she cannot bear the slightest blast of wind, and is obliged to roll herself on the floor. She was ordered three drachms of the solution of the valerianate of ammonia in infusion of calumba every three hours.

On Nov. 13th she was very much better; has had only three attacks since the 9th. The medicine to be continued.

23rd. Has had no pain since the 18th.

*Case* 3.—R. P., a married woman, aged 42; has had eight children; works as a laundress; has suffered from neuralgia of the fifth pair on the left side for nearly twenty years, and has sought advice at many hospitals with only temporary relief. When the paroxysm is most severe the pain extends to the side of the neck and shoulder: it also causes deafness. She is obliged to go to bed, and cannot take any food, the slightest motion causing intense agony. For ten years back the paroxysms have been more severe and of longer duration. She was admitted under the care of Dr O'Connor, on the 13th of November, whilst in severe agony; had no sleep the previous night; her health is otherwise good; and the teeth perfectly sound. She was ordered four drachms of the solution of valerianate of ammonia, in infusion of calumba, to be taken every three hours; a dose of compound powder of jalap directly.

On the 27th she states that after a few doses of the medicine the pain diminished, and on the following day it entirely disappeared.

Jan. 8th, 1862. This woman became an out-patient from an attack of influenza. She states that since the 28th of Nov. she has not had any return of pain.

*Case* 4.—L. C., aged 49, a married woman, admitted on the 20th of Nov. She has had nine children; has been for nearly ten years subject to severe attacks of neuralgia of the right side of the face, right eye, and the tongue. These paroxysms came on generally at eight o'clock in the morning and four in the afternoon, and as soon as she puts anything into her mouth she describes the pain as insufferable. Her health is otherwise good and her teeth are all sound. She was ordered a draught composed of four drachms of the solution of valerianate of ammonia in infusion of valerian, to be taken every two hours, and to be repeated oftener if the pain continues in its severity.

Nov. 30th. She states that since the 27th she has had sound sleep every night, and the paroxysms of pain only come on once a-day, and then of much milder character. The medicine to be taken every six hours.

Dec. 14th. Has had no return of pain since the 1st, and now feels quite well.—*Lancet, Jan.* 18, 1862, *p.* 68.

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## 18.—BROMIDE AND IODIDE OF POTASSIUM IN EPILEPSY.

Cases and Clinical remarks by Dr. WILKS, Guy's Hospital.

[The efficacy of the iodide of potassium in cases of epilepsy arising from syphilis is not singular. Most remarkable success sometimes follows its exhibition.]

The bromide was recommended by Sir C. Locock as a remedy having some influence over the ovary in females, and therefore curative of those epileptiform affections which might be due to an irritation of this organ. Although this theory was questionable, yet if it were founded on any facts showing the efficacy of the remedy, this was an additional reason for adopting it; and we thought equally good for all cases, whether men or women. Since using this remedy, Dr. Wilks added, now for two or three years, and in a large number of cases, he had undoubtedly had more success than heretofore, being fully aware, he said, of the remarkable fact that epileptics generally seem to be better on any new remedy, whatever its nature may be, and, also, that should it exert a real influence that the benefit is often only temporary. The *rationale* of this success is connected, we imagine, with the remarks just now made, that many cases of epilepsy depend on a local affection of the bones or membranes which the remedy removes by its absorbent powers.

Not that we can prove the existence of any such cause in most instances, but knowing the value of the medicine where such cases do exist, we have explained its *modus operandi* by its selecting out these cases for cure. That epilepsy may exist for years, and only at death a local cause be found, we know from several instances, and in such there has been no difficulty in discovering a history of injury at an early period of life. Another explanation for an occasional cure by this remedy may be found in the fact, that fits arise sometimes from lead poisoning, and that the iodide or bromide of potassium is instrumental in eliminating the poisonous metal from the system. In two or three cases we have seen epileptiform fits arising from lead poisoning, and in which iodide of potassium was used with success. In this way it may sometimes have been supposed to have cured epilepsy.

Knowing how apt we are to be deceived by the operation of a new remedy, I do not speak more peremptorily on the subject, but add a few cases; only stating that I continue to use it in all new cases which come before me, believing it to be wise to adopt some such remedy in the first instance.

*Case* 1.—Cecilia D., aged 22, came to the Hospital in April, 1860. Her mother accompanied her, as she was unable to find her way and was childish in her manners. The mother, indeed, never left her night nor day, as she generally had two or three fits a-day. They had existed many years, but for two years had occurred daily. She had more than once fallen into the fire and burned herself. She was ordered five grains of bromide of potassium three times a-day. The fits soon began to grow less in number, but the improvement was not very marked until her visit on June 6, when she had had no fit for three days, and in the following week, the 13th, had had none. After this they occurred at long intervals. She persisted in the medicine, with the exception of a week or two, and the report was, on October 24, "No sign of a fit for two months." At the end of another month, there having been no attack and her health improved, she ceased to attend. On February 13, 1861, she came again to the hospital; she had remained well ever since (nearly six months) until a few days before, when, having lost a brother suddenly, she was seized with four fits in succession. She commenced the same medicine again and persisted in it for six weeks, until her letter was out, when, having had no return of the fits, she was dismissed. This girl thus not only lost her fits, but became more robust and in better health, a fact, Dr. Wilks said, he has noticed in similar cases, that as the disease recedes so does the health improve. In this particular case it might be thought that with such a striking result some syphilitic taint was present, but none such was discoverable.

*Case* 2.—Amy M., aged 13, came as out-patient with fits in March, 1860. She took bromide of potassium in three-grain doses, and the fits soon ceased. At the end of three months none having occurred, she left. This case is unsatisfactory, as a long interval sometimes intervenes between the attacks.

*Case* 3.—Alfred C., aged 36, a worker in lead, came to the hospital on June 13, 1860. He was a very feeble man, and had a remarkably sallow or waxy complexion, and had a blue line on the gums. He had fits and some hesitation in his speech. He took the iodide in three grain doses, and left at the end of two months in much better health, and with a cessation of the fits.

*Case* 4.—Francis K., aged 34. For two years he had been subject to fits. At first they appeared at long intervals; afterwards, about once a month, subsequently about twice a week

He stated that he fell without any notice, and struggled violently. He was ordered the bromide, and when he left, in December, 860, he had had none for ten weeks. He was seen some weeks afterwards, and he stated that he had had a slight warning wice, but never a decided paroxysm.

The following case affords a good example of the advantages of accurate diagnosis. It might, Dr. Wilks said, be regarded as a typical case of syphilitic epilepsy cured by iodide of potassium :—

Robert C., aged 36. He was a carpenter, but formerly had been a soldier in India; was invalided, owing to rheumatism or pains in the limbs. Two months before admission he had a fit whilst walking in the street; and on recovery he felt his left arm and leg numb and weak. He has had about a dozen fit, since, and in some of these he has not lost his consciousnesss but he foamed at the mouth, and bit his tongue. Two days before admission he had a fit, followed by a great loss of power of the left arm and leg. On admission he was exceedingly ill, complained of great headache, and had partial paralysis of the left side, the arm being almost powerless, but the leg he could move a little. He soon after had three fits, in which he was convulsed all over, and screamed out. This he had done in previous attacks, and it was said "acted like a madman," although in the slighter attacks he had retained his consciousness. In the intervals he complained of pain in the right side of the head and neck, and was so weak that he could not move his head from the pillow. He was almost totally paralysed on his left side; the weakness increased since admission; sensation perfect; no paralysis of face; eyes unaffected; pupils natural; also great difficulty of swallowing, and mouth aphthous. His wife was sent for to sit up with him, as it appeared scarcely possible that he could survive long. As the patient had never been in a condition to give a good history of his case, the wife was questioned and she said that he had a fall two or three years before, also that he had long suffered from pains in the limbs, and that she had had several miscarriages and dead-born children. The patient was then again examined, and it was found that one clavicle was enlarged, as well as os femoris on one side. All these circumstances suggested syphilis, and therefore, iodide, in ten-grain doses, was given. He began to improve in a most remarkable manner; only one or two more fits occurred; the paralysed limbs began to get stronger, and complete consciousness returned. His general condition also improved, and by the expiration of three weeks he was able to leave his bed and walk about. At the end of another week he had only a slight dragging of the foot, and he left the hospital convalescent by the termination of not quite a month after the commencement

of the medicine. This case afforded the most remarkable recovery we have ever witnessed from a disease of this severe character.—*Medical Times and Gazette, Dec.* 21, 1861, *and Jan.* 4, 1862, *pp.* 635, 7.

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## 19.—EPILEPSY SUDDENLY AND REMARKABLY RELIEVED BY THE USE OF ARSENIC.

Case under the care of Dr. Bristowe, at St. Thomas's Hospital.

The patient is a shop boy, 14 years of age, who has been subject to epileptic fits for upwards of two years. They came on without obvious cause, and at first were always nocturnal. They increased gradually, so that after a time he generally experienced two or three every night, and often one or more in the day. In May last he was admitted into the hospital, where he remained four months; and under the treatment there employed so far improved that during the latter part of that time, and for the following three months, the fits recurred only about once a month. A week before his last admission, however, they came on again suddenly, and with great severity. For the first three or four days of this time the fits followed one another night and day with great rapidity, but he had intervals of consciousness. For the last three days, however, the fits were still more frequent, and he continued between them in a state of insensibility. He was admitted on November 13 in the condition just described, but in so utterly prostrate a condition that his speedy death was anticipated. With the aid of a purge and of a blister to the neck he emerged from this critical state, and became quite conscious. The fits, however, though rendered less frequent, did not cease, and he was ordered to take two grains of sulphate of zinc in infusion of valerian three times a-day. From this time up to December 7 the above line of treatment was pursued, the dose of sulphate of zinc being gradually increased to ten grains. During the whole of this period, however, his condition was a peculiar one. His lower extremities, which previously had been healthy, were feeble and uncertain in their movements, like those of a paraplegic patient, so that he was unable to walk; but there was no anæsthesia. He was therefore in bed, and for the most part in a semi-recumbent posture But it was observed that whenever he tried to turn or otherwise moved his legs, and especially, therefore, if he were made to get out of bed, a peculiar numbness or sensation of "pins and needles" crept from the toes upwards, and was followed in a few seconds by a fit,—the fit lasting for about half a minute only and being preceded by a prolonged and distressing scream. The truth of the statement just made was repeatedly verified by Dr. Bristowe. It was ascertained, however, that after a fit has

been thus produced he enjoyed a perfect immunity for about a quarter of an hour, during which time he might move about as he pleased without any ill results; and it was further ascertained that by careful management he could, and usually did, prevent the occurrence of any fit during the day. They took place, however, frequently in the night, always preceded by a scream, and they increased in frequency nightly, so that on the night of December 6 they were so numerous that his constant screaming prevented any of the patients in the ward from getting rest.

On the next morning (the 7th) the medicine he had hitherto taken was ordered to be omitted, and five drops of liquor arsenicalis with compound infusion of gentian thrice daily were prescribed. He had no fit the following night, and none during the succeeding eight days. For two or three days he still suffered from occasional attacks of numbness in the leg; these feelings, however, quite disappeared, and he recovered completely the use of his lower extremities. On the afternoon of the 16th he was visited by his mother and several of his friends who remained with him for some time. Almost immediately after they left him, the fits returned, and between five and ten p.m. came on every ten or fifteen minutes. During the night he had two; and during each of the two following nights he also had one or two attacks. From the 18th, however, up to the present date (the 31st) he had continued entirely free, and apparently quite well.

There are a few particulars to be added to the case. The boy was, and is, pale and anæmic-looking, but his digestive functions seem naturally performed; he has no cardiac or pulmonary symptoms. He is quite intelligent, and so far as can be ascertained has no spinal or renal disease. The mode of access of the fits, the way in which they could be produced at pleasure, and the way in which their occurrence could during the day-time, be prevented, are all interesting, but do not perhaps call for special comment. The effects of the arsenic were, however, so sudden and so remarkable, that in order to show they were not fallacious, a few words seem necessary. It will be observed that the fits were nocturnal, and that they increased in severity up to the very night before the change of medicine was made. The change of medicine, further, wa seffected without calling his attention to the fact, or to the probability or possibility of any special effect from it; so that the sudden disappearance of the fit could scarcely have been due to any mental impression, and could scarcely have been a mere coincidence. It will be observed, too, that though the fits themselves ceased at once, the aura persisted for a time, and further that even after the latter had disappeared, the liability to have fits from any excite-

ment continued; both of which points are quite compatible with the view that the amendment in this case was due to the use of arsenic, and indeed favour it.—*Med. Times and Gazette, Jan.* 11, 1862, *p.* 32.

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## 20.—DIGITALIS IN DELIRIUM TREMENS.

By Dr. Robert Duchesne, London.

[The following case is interesting, as the treatment of delirium tremens by digitalis is still *sub judice*. It tends to point to those cases in which it may be expected to prove especially useful.]

W. A. H., aged 35, of small stature; in good condition of body; fair; of excitable temperament; a small draper or tally-man; of sober habits. Has for the past week taken more spirits than usual, and on December 25th indulged very freely, eating almost nothing. First seen on the 28th of December; usual symptoms.

*Treatment.*—Opium and chloric ether; then morphia, commencing with a quarter of a grain and increased at last to one grain every four hours, with three ounces of whiskey—the *fons et origo mali*—and one pint of beer, with milk and beef-tea, up to January 3rd, the day on which I saw him. His condition was this:—Pulse 84, soft and full; secretions arrested; pupils contracted; head hot and heavy, dull pain suboccipitally; skin perspiring very freely. Slept three hours last night, three this morning, and has had sleep during the treatment. He had nausea, felt muddled, and in fact was narcotised; the delirium persists. To discontinue the morphia, and take effervescing ammonia mixture with Scheele's acid. 11 p.m. Has passed urine, but continues very restless and rambling: has taken his milk and beef-tea, with some whiskey and beer. To take at 3 a.m., ℥ss. tinct. digitalis, aquæ ad ℥jss; spirit lotion to head.

4th, 8 a.m. Patient would only take half the draught; no effect. To repeat the draught. 2 p.m. Slept from 9.30 a.m. to 1.30 p.m. Took some beef-tea, and is now asleep. To take ℥ij. tinct. digitalis, aquæ ℥vj. every six hours; milk and beef-tea; beer, no whiskey. 10 p.m. Still asleep; two doses taken.

5th, 9 a.m. Asleep. Woke up at 8, and had some toast and coffee with milk. 9 p.m. Has slept the greater part of the day; has eaten three mutton chops; no more medicine taken, but bowels have been very freely relieved both yesterday and to-day; urine normal; no delusions; is convalescent.

On the following day I put him on citrate of iron and quinine, with nux vomica, and I am now about to take my leave.

It will be remarked that this was a primary attack, occurring in a young man of tolerably regular habits, although of weak

constitution and nervous temperament; that the worst day of the attack was that on which the effects of morphia had become fully developed, and that the effect of the digitalis was most marked and rapid, the pulse becoming firmer, the sweats ceasing, and most comfortable somnolency being immediately induced. It had also an equally-marked action on the intestinal canal. In all, one ounce of the tincture was taken.—*Med. Times and Gazette, Feb.* 1, 1862, *p.* 120.

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21.—*Capsicum in Delirium Tremens.* By CHAS. FERNELEY, Esq., Grantham.—[Mr. Ferneley's attention was first directed to this treatment of delirium tremens by Dr. Foss, principal medical officer of the garrison at Cork. He says :]

I have used it on several occasions both in public and private practice with success, its administration having almost invariably been followed by more healthy perspiration and refreshing sleep, from which the patient has awoke quiet and relieved from the nervous excitement. The way that I have used it has been in the form of punch, first making a moderately strong infusion, two scruples of Cayenne pepper to a pint of boiling water, straining it when cool, and adding sugar and citric acid to suit the taste. It is very palatable, and will be taken by the patient *ad libitum.*—*Lancet, March* 15, 1862, *p.* 287.

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## DISEASES OF THE ORGANS OF CIRCULATION.

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### 22.—ON REGURGITANT AORTIC DISEASE OF THE HEART.

By Dr. HYDE SALTER, F.R.S., Assistant Physician to Charing Cross Hospital.

[The patient, a bill-poster, a man of 40 years of age, was not exactly to be called a temperate man. He had an attack of rheumatic fever three years ago, and was left with palpitation and embarrassed respiration. These symptoms have increased up to the present date.]

The first thing that would strike you on looking at this man would be his dyspnœa. There are great differences in dyspnœas, according to the different causes that produce them, and which suggest many interesting physiological questions, into which, however, I must not enter. Now this patient's dyspnœa is eminently *cardiac*. The peculiar characteristics of cardiac dyspnœa are these :—It is rather a breathlessness than a difficulty of breathing; it has a panting, gasping character; the sensation

complained of is that of oppression, not tightness, and has a strangling, choking throat-feeling about it. The breathing is always greatly accelerated; many dyspnœas are not—laryngeal dyspnœa, for instance, which is often slower than natural; but cardiac dyspnœa always is. This man is breathing forty-six respirations in a minute.

Another peculiarity of heart-dyspnœa, well illustrated in this case, is its great intolerance of movement, or any exertion whatever. Very often, in heart-dyspnœa, exertion is the only circumstance under which the dyspnœa is felt. As long as the patient is at rest there may not be the slightest sense of difficulty of breathing, and the respiration may not be distinguishable from that of a person in ordinary health; but the moment he exerts himself, especially if ascending a hill or going up stairs, his breath is gone. So it is with our patient. Although his breath is always short, even when perfectly at rest, it becomes frightfully difficult if he attempts to move. He declares that merely turning his head brings on the dyspnœa; speaking is almost impossible; he cannot rise from his bed, or move two steps, without being completely *hors de combat*.

Another peculiarity of the dyspnœa of heart-disease is its intolerance of the recumbent posture; and this peculiarity has given its name to one of its most characteristic forms—*orthopnœa*. The word really signifies merely "upright breathing"—compulsion to assume the erect position in order to breathe; but clinically it stands for a good deal more—for a recognised and well marked group of respiratory phenomena. Our patient is an example of it in its severest form; he has not lain down to sleep for ten days and nights; and if he momentarily dozes in even a semi-reclining posture, he is instantly awoke by impending suffocation.

There are three forms, or rather degrees, of orthopnœa: the first, in which the patient may suffer little or no dyspnœa when awake, even when exerting himself moderately, or ordinarily when sleeping in the recumbent posture. He lies down and goes to sleep as if in health; but occasionally, in the middle of the night, he is suddenly awoke with a strangling, gasping breathlessness; starts up, flings the clothes from him, and struggles for his breath as if he was dying. Very commonly the patient jumps from his bed in the effort to get more air, and sits gasping on the side of it, or leaning on a chair. It is often a quarter or half a minute before he can "turn his breath"; and, when he does so, his respiration is hurried and panting. As the circulation through the lungs becomes freer this gradualy subsides, and the breathing becomes as tranquil as ever. This may happen at long intervals, or frequently; very often it occurs regularly every night, and sometimes many times in a

night. The fear which patients exhibit, after such a paroxysm, of going to sleep again, lest another should come upon them, shows how terrible is the sensation that accompanies the struggle.

Another form is that in which the patient can breath well in any position as long as he is awake, and can sleep perfectly well sitting up, but cannot sleep lying down for a moment, the attempt to do so being immediately attended with the characteristic paroxysm. In these cases, the patient is obliged to sleep in the erect posture, and in that way gets pretty good nights.

The third and most intense form is that in which sleep is altogether impossible in any position, even sitting: the moment the patient dozes, on comes the struggle; he is wide awake in an instant; sleep is hopelessly banished from him. If you stand by and watch a person in this state, which is a most painful thing, you see his drowsiness gradually overpowering him; his eyes close; his breathing seems momentarily more tranquil, and you would fancy he was just falling off into a refreshing slumber; but, a moment after, he starts up with a look of horror, and his quiet breathing is instantly exchanged for the orthopnœal struggle.

This last is the form of orthopnœa from which our patient suffers; he has not had ten minutes sleep, night or day, for nearly a fortnight; he is dying with sleepiness, but dares not yield to it; and, if it overcomes him, he is unconscious but a few seconds before he is broad awake in a death-struggle for breath. Such cases show with how little sleep a person can go on living. I think it is impossible, in the whole range of the incidents of disease, to imagine any suffering that can compare with this: the thirst of Tantalus could not be worse. It is not wonderful that the sufferers long for the sleep of death.

And this leads me to speak of what is the absolute nature of heart-dyspnœa.

The essential condition of tranquil respiration is a free renovation of the two fluids, air and blood, in the lungs; the essential condition of dyspnœa is an impeded renovation of one or both of these fluids. In lung-dyspnœa, the fluid whose renovation is impeded is the air—as, for example, in bronchitis, asthma, emphysema; in heart-dyspnœa, it is the blood. The immediate cause, I believe, of the sensation of want of breath, in any form of dyspnœa whatever, is congestion of the capillaries of the lungs, dependent generally on the presence of venous blood in those vessels. How this is produced by shutting off the air we understand perfectly well; the oxygenating agent is not supplied; the appropriate changes do not take place in the blood; and the capillaries, exercising upon it some obstructive force the exact nature of which we do not know, refuse to give it free transit,

and it accumulates in them and in the pulmonary veins behind them, constituting the congestion of asphyxia. In the lung-congestion from disease of the left side of the heart the sequence of events is quite different. The point of obstruction here is not in the capillaries of the lungs, but at the heart; so that the whole of the pulmonary circulation, veins as well as arteries, is affected by it. The capillaries become loaded, not from the blood being in a state unfit to pass from them, and from an opposing action to its free transit exercised by themselves, but from finding in front of them loaded pulmonary veins. Moreover, in cardiac congestion of the lungs, until ulterior changes take place, the access of air to the pulmonary capillaries is free, and the blood in them therefore arterialised. Thus, in the congestion of asphyxia, the capillaries are loaded with venous blood; in that of heart disease, with arterial. But we know that impediment in the capillary circulation of an organ as inevitably involves suspension of its function, as suspension of its function involves impediment in its capillary circulation. We know, for instance, how mechanical congestion of the kidney diminishes the quantity of the urine. And, although the blood in the congested pulmonary capillaries in heart-disease may be arterial, yet being itself unable to pass on, from the obstruction in front, it prevents the venous blood behind it reaching the seat of arterialisation, and so suspends the function of the lungs, and loads the branches of the pulmonary artery with venous blood, as as much as in true asphyxia. And it is not long before the congested capillaries relieve themselves by serous transudation, giving rise to vesicular and interlobular œdema, and other ulterior changes, so that respiration becomes directly impeded. Nevertheless, there is at first that difference between cardiac and asphyxial lung-congestion which I have indicated; and the points of contrast may be tabularly represented thus :—

| *Pulmonary Congestion of Asphyxia.* | *Pulmonary Congestion of Heart-Disease.* |
|---|---|
| Suspended function producing capillary stasis. | Capillary stasis suspending function. |
| Point of obstruction the pulmonary capillaries. | Point of obstruction the heart. |
| Pulmonary veins emptier than usual. | Pulmonary veins loaded. |
| Blood in pulmonary capillaries venous. | Blood in pulmonary capillaries arterial. |

Since, then, in the first stages of cardiac dyspnœa, the blood in the capillaries of the lungs is arterial, the presence of venous blood in them cannot be necessary to the sensation of want of breath: impeded transit of blood through the lungs, and a

loaded state of the pulmonary circulation, would appear to be all that is necessary.

The extreme dyspnœa from which our patient suffers suggests the question as to what form of cardiac disease the most embarrasses the breathing; for we often see patients dying of heart-disease with much less dyspnœa than we see in this poor man at the present time. This question I am not prepared to answer. I should have imagined that mitral regurgitation, constituting an obstruction that the most directly tells back upon the pulmonary circulation, would have the greatest tendency to engender dyspnœa, as it certainly has to produce pulmonary hemorrhage; yet here we have what we may call acute orthopnœa, easily induced by a valvular derangement from which the lungs are protected by the intervening healthy mitral valve. I profess myself, then, unable to answer this question; but it is one well worth thinking of, and well worth making the subject of observation.

I have detained you thus long in analysing one of this patient's symptoms—the dyspnœa—because it is, as I hope I have shown you, so full of instructiveness, physiological as well as pathological; but there is another symptom that would strike you as immediately as the dyspnœa—the *cough*. This is the true cardiac cough—a single hacking cough, not in paroxysms, but iterated, keeping on; never urgent, yet not passing half a minute without occurring; feeble, with a certain throat-hoarseness about it, having rather a choking character, and with no expectoration as its result. When I say *no* expectoration, I should say there *was* no expectoration; but a little is now appearing.

In prosecuting our inquiry into our patient's symptoms beyond what superficially manifests itself, the first thing that would strike us would be his *pulse*. Now, this pulse is utterly peculiar; it is diagnostic of aortic regurgitation; in no other state whatever could it occur; it points to that one thing alone; and any one of you might on the strength of it, and without making any examination of the heart, safely diagnose the valvular lesion. When I first listened to this patient's chest, the only sound that I heard was at the base, with the *first* sound (systolic aortic), and I therefore pronounced the disease to be aortic obstruction; but, the moment I saw the pulse, I knew there must be aortic regurgitation, and, on listening again, plainly heard, at the same situation, a bruit with the second sound (diastolic aortic); and we have heard it ever since, much more plainly than the systolic; and how it was it escaped me at first, I am at a loss to explain. I need not tell you that the peculiar character of the pulse to which I refer is a conspicuous leaping jerk, not only perceptible to the touch, but visible to the eye; carotids, temporals, brachials, radials, tibials—

in fact, all the arteries wherever superficial, and where not ordinarily visible, are plainly seen leaping forth at each beat of the heart; and the pulse may be counted in all of them, as well by the eye as by the touch. The arterial system seems alive; and, whenever the arteries are tortuous, a peculiar sudden writhe is visible, like a centipede when touched. This pulse has been called a "jerking" pulse; I think a "leaping" pulse would perhaps be a better name. It was called by Dr. Todd, a "locomotive" pulse—an injudicious name, I think; for *locomotive* is just what it is not: it is motive, but not locomotive.

The way in which it is produced by the lesion which it implies is sufficiently clear. When the aortic valves are sound, the complete and instantaneous closure of the aortic orifice maintains the tension of the arterial system which the additional volume of blood sent into it by the systole has just carried to its maximum. The systole *makes* the arterial system tense, the valves *keep* it tense, and therefore the next systole *finds* it tense; but where, from insufficiency of the aortic valves, the blood largely refluxes into the ventricle, the tension of the arteries is suddenly lost, their tendency to contract on their contents is unresisted, and they instantly collapse. The state of the arterial system at systole and diastole is, in the one case *full—kept full; full—kept full:* in the other it is, *full—empty; full—empty.* It is this alternation of a condition of fulness and emptiness, instead of the maintenance of a nearly uniform fulness, that mainly contributes to this jumping character of the pulse. I am accustomed to compare the natural pulse to the dead beat of a chronometer, and the regurgitant pulse to the beat of the second-hand of an ordinary clock. In the one, for every second moved, the hand moves forward a second, and then holds its own: in the other, there is a back stroke of as much as half a second; so that for every beat the second-hand moves forward a second and a half, and back half a second. Which looks the most "lively" and mobile, all will know who have watched the two methods of beat: in fact, one goes over just twice as much ground as the other in the same amount of progress. The analogy of these two beats to the natural and jerking pulse is, I think, very close. Moreover, a ventricle emptying itself into a collapsed arterial system would probably do so in a more jerky and sudden way, than if driving its contents into an already tense and preoccupied aorta. Moreover, the more tense the arterial wall, the greater and the more sustained is its reaction upon the contained blood, and the more complete that conversion of the systolic pumping into the even flow characteristic of the circulation in the smaller vessels, which it is the purpose and effect of this elastic reaction to produce. The sudden loss of arterial tension on the reflux of the blood into

the ventricle must almost destroy this conversion of the intermittent systole into the sustained *vis a tergo* of the more distant arterial streams; and thus we see, in these cases, the smallest arteries beating with almost as much jerk as the largest. Moreover, at each diastole, the blood in the arteries must, comparatively, come almost to a stand-still; therefore the next jerk finds a too stationary blood in front of it—a blood, therefore, more than usually antagonising the onward flow of the fresh instalment from the ventricle. Now, we know that the force of the ventricle is partly spent in driving the blood onwards; and partly, in consequence of the resistance that it experiences in this direction, that it acts laterally on the arterial walls, and distends the arteries. The greater, therefore the resistance that it experiences in front, the more it is spent laterally.

In all these ways, aortic regurgitation conspires to produce the excessive arterial pulsation that presents so remarkable an appearance in our patient.

On examining the heart, we find, besides the sounds I have described, that it is beating with a too strong and heavy impulse, that the apex beat is too low, and that the heart altogether is greatly displaced downwards. Now, I am sure it is a mistake to regard this downward displacement as due only to hypertrophy. Three causes conspire to produce it:—one, the hypertrophy of the organ; another, the dyspnœal inflation of the lungs; and another, the flattening of the diaphragm, which always exists where there is an abiding source of dyspnœa, where there is an unsatisfied and unsatisfiable demand of the conditions of respiratory balance. This descent and flattening of the diaphragm is, in fact, a part of that chest-distension which immediately supervenes whenever there is a condition of respiratory arrears; it is the instinctive and direct effort to set things right, and restore the balance, by getting more air. If you examine the heart of a person panting from exertion, you will find it beating considerably lower than usual; the moment a paroxysm of asthma comes on down goes the heart from this descent of the diaphragm, and may be plainly felt beating in the scrobiculus; in fact, in all dyspnœas this is the case, and the dyspnœa of heart-disease is not an exception. For although in heart-disease, the disturbance being on the side of blood-supply, and not on that of air-supply, the introduction of an additional quantity of air does not better the state of things; it, nevertheless, instinctively occurs. It is, therefore, a great mistake to imagine that the amount of hypertrophy may be measured by the amount of downward displacement of the cardiac dulness. A striking confirmation of this is shown in the fact that while, in cases of undoubted hypertrophy, there is great downward

displacement of the heart's dulness, there is often no upward extension of it at all; nay, that it will not extend as high as usual. The fact is, that with the dyspnœal chest-distension there is dyspnœal lung-inflation, the inflated left lung overlaps the heart in an excessive degree above and to the left, and thus we get, to a certain extent, the same state of things as in emphysema. The unduly expanded left lung may also be said to thrust the heart downwards and to the right. In a temporary source of dyspnœa, as asthma or violent exertion, this state of things is essentially temporary; and as soon as the breathlessness is over the heart returns to its normal position, and its dulness to its normal limits. But in such a case as our patient's, this condition is permanent, and we see it in him very strongly marked. The dulness involves the ensiform cartilage and the sternal extremity of the eighth, and even the ninth rib; while, above, the cartilage of the fifth and the corresponding portion of the sternum is resonant.

We must, therefore, be on our guard, on the one hand, against imagining that the whole of the downward extension of the heart's dulness is to be explained by the hypertrophy; and, on the other hand, that because there is no upward extension of dulness, or even less than usual, there is, therefore, no hypertrophy at all; for you may have considerable downward extension of dulness, and yet there shall be no hypertrophy; you may have no upward extension, and yet hypertrophy shall exist.

And let me take this opportunity of earnestly impressing upon you the importance of bearing in mind this axiom (if I may so call it) in auscultation, that any source of dyspnœa induces a condition of hyper-distension of the chest, temporary if the source of dyspnœa is temporary, abiding if abiding. Unless you bear this in mind, you will be in constant danger of drawing erroneous conclusions as to the existence of emphysema, heart-disease, and various other conditions. I the more earnestly impress it upon your attention, because I am sure it is a fact that has been very much overlooked, and to which sufficient importance has not been assigned. I have sufficiently explained it in my work on *Asthma* and elsewhere; and, therefore, I shall not now detain you by entering into its rationale.

Let me direct your attention to this patient's *sputum*. You may remember that I told you just now that his cough was at first quite dry, but that now some expectoration is appearing. Now, why should this man spit? He has had no bronchitis; he has had no pneumonia; his respiratory mucous tract has not been affected by any of those conditions which commonly give rise to fluxes and exudations from mucous surfaces. Where does the sputum come from, and why does it come? It comes from the only place from which mucous sputum can come—

from the bronchial mucous membrane; and it comes because that membrane is congested. There are evidently two conditions in which mucous surfaces pour forth an inordinate secretion; one, active inflammation; the other, passive congestion. In fact, any hyperæmia of a mucous surface, whether active or passive, relieves itself by an increase of the secretion of that surface. But there is, I think, this difference, that while the secretion from an inflamed mucous membrane is often highly purulent, that from a mucous surface merely congested, is either not at all so, or very slightly; I am inclined to think, not at all. Now if you look at this sputum you will see that it has no admixture of pus; that it consists of a grey gelatinous mucus, not opaque, and with no trace of yellow in it. It is very like the sputum of asthma, and is produced in the same way—poured out to relieve a state of congestion engendered by embarrassment of the pulmonary circulation. In pure asthma you have no inflammation of the bronchial mucous membrane, and yet it is very rare for an attack of asthma to pass off without the ocurrence of this mucous exudation; never, I think, unless the attack is exceedingly transient. This is, in my opinion, an important distinction; and I believe that the presence or absence of pus will always enable us to diagnose whether the mucus is the result of an inflamed, or a merely loaded condition of the bronchial mucous membrane; at least, the presence of pus will always enable us to say that there is something more than mere congestion, although, in the very earliest stages of inflammation of the air-passages, the absence of pus will not prove that such inflammation does not exist.

And now, in conclusion, a word or two on treatment. What is to be done in a hopeless case like this, rapidly running to a fatal issue? How can we better this poor man's condition, incurable and unreachable as the organic foundation of it is? In one way, and only in one way, that I know of. His disease is essentially mechanical, and in a mechanical and material direction we must aim at its relief. The machinery of his circulation is out of gear. Now, in the circulation of the blood, there are three things concerned—the active organ, the heart; the passive organs, the sanguiferous vessels; and the fluid to be circulated, the blood. In this case, the passive organs and the fluid to be circulated are as they should be; the active organ is spoiled, and by this spoiling is no longer equal to its work. How, then, can we bring about some approximation between the work to be done and the power to do it? The heart we cannot reach; and if we could, its derangement is essentially irremediable; the passive organs we cannot influence—we cannot shorten the distance the blood must reach, nor supplement the heart's deranged machinery by any fresh force.

There is only one thing left; to diminish the quantity of the fluid to be circulated. We cannot raise the machine to its work; we must lower the work to the machine. If we can do this, we may hope, *pro tanto*, to disburden the embarrassed heart, and to relieve the choked and loaded vessels.

There are two ways in which this may be effected. Blood may be directly abstracted. And there is no doubt that immense relief would immediately follow venesection in such a case. But we know from the rapidity with which some elements of the blood are restored, and the slowness with which others are, that such a quantitative reduction of the blood is speedily followed by a qualitative deterioration of that which is left. We do much better, then, if we can select what elements of the blood we will withdraw, and leave behind those which are the most valuable and of the slowest repair. Diuretics and hydrogogues enable us to do this. But I have found in these cases, direct diuretics peculiarly inoperative; I believe them to be almost worthless. When the mechanical embarrassment of the circulation is extreme, and the quantity of the urine greatly reduced (as it almost always is) by the slow renewal of the blood in the kidneys, you may give diuretics for ever and get no results. I believe the blood in the Malpighian capillaries is in a state almost of *stasis*, and having parted with its water, is not promptly succeeded by relays of fresh blood with a *plus* quantity of water, as is the case in health. To give diuretics in such a state of things is beginning at the wrong end; the renal circulation must be disembarrassed before the kidneys can filter away much water. Hydrogogues then alone remain to us. Of these we have many; our choice is large—jalap, salines, and a long list of purgatives. But by far the most powerful and satisfactory is elaterium. And I think, if I could show you some cases that have recently come under my observation, you would be disposed to admit with me that the results attained by the administration of elaterium in cases of cardiac dropsy are among some of the most striking—I may say the most startling—triumphs of therapeutics. Floods of water are draughted away from the bowels, the dropsy vanishes, the breathing becomes unembarrassed, and the patient is restored, for a time, to a condition of very tolerable comfort. This is no exaggeration. Only about a month ago, I saw a very striking case. I was called to see a man at Camberwell, who was supposed to be, and really was, *in extremis*. I found him distended with dropsy; his legs like two Doric columns; and he had not been in bed for many nights, owing to the urgency of his dyspnœa. I heard, about a fortnight afterwards, that his improvement had been so rapid and so great under the use of elaterium, that he had returned to active business in town, and had resumed his employment as a tra-

veller for one of the principal brewing firms in this city, and was at that time travelling in Northumberland. In fact, I am now never surprised at any amount of improvement that follows the use of elaterium in these cases. The only disadvantage that it possesses is, that the patients are often in a state of extreme exhaustion, and the action of the drug is frequently, in a high degree, depressing. To obviate this evil as much as possible, I allow sufficient time between the doses for the patient to recover himself, and, at the same time, freely support with stimulants and tonics. If the elaterium is given at long intervals the dose must, of course, be proportionately larger, and I find that the patient is less exhausted by a good dose every other day, than by smaller doses more frequently repeated. My plan is to give a third of a grain, or even half a grain, about five o'clock every other morning. By ten or eleven o'clock the whole thing is over; immense watery defluxtions have taken place from the patient's bowels, leaving him wonderfully lightened and relieved, but much exhausted. (I generally begin, I ought to mention, with the sixth or eighth of a grain, and increase the dose as I find my patient will bear it. It is a dangerous thing to start with a large dose of elaterium at first; partly because different individuals tolerate it so differently, and partly on account of the unequal strength of the drug.) At the same time, I give some such mixture as the following, in a wineglass of water, every three or four hours:—

℞. Liquor. cinchon. (Battley) ℥xx; spirit. ammon. arom. ʒss; ætheris sulph. co. ʒss. M.

Under the influence of this, with the aid of the intervening recruiting day, patients will bear the quantity of elaterium I have mentioned for an indefinite time, and even gain strength under it, or, rather, in spite of it. A fortnight of such treatment is often sufficient entirely to transform the patient's condition. One important result of this treatment is that, with the disappearance of the rest of the dropsy, the œdema of the lungs also vanishes; thus, one source of the dyspnœa is removed, and, by the free admission of air into those portions of the lungs previously occupied by the serous infiltration, the asphyxial element of the pulmonary blood-stasis is cleared away, and one additional source of heart embarrassment removed. I think this is one of the most important results of this hydrogogue treatment: the other results relieve the breathing indirectly, this directly. It is a most interesting thing to watch, day by day, under these circumstances, the gradual descent of of the signs of the œdema at the back of the lung till not a trace of it remains.—*Brit. Medical Journal, Feb.* 1 *and* 8, 1862, *pp.* 109, 137.

## DISEASES OF THE ORGANS OF RESPIRATION.

### 23.—ON PNEUMONIA.

By Dr. C. J. B. Williams, F.R.S., Consulting Physician to the Hospital for Consumption and Diseases of the Chest, Brompton.

This disease I regard, not as a local inflammation, but as a disease affecting that vascular plexus which conveys all the blood of the body—as an inflammatory disorder of the lesser circulation of the body. It is not a local, but essentially a blood disease, and brought about by agencies affecting that fluid. Then there are certain poisons which, if introduced into the blood, produce pneumonia. The bite of a rattlesnake has this consequence; the injection of phosphorus into the veins; the slow absorption of arsenic through a wound. So also with certain fevers, which, besides a tendency to affect the whole frame, tend specially to excite pneumonia. Asphyxiating influences produce pneumonia. Further, any influence which affects violently the whole circulation is very likely to end in pneumonia; especially that great cause, cold, and most strongly when combined with fatigue. It is not so much ordinary cold which excites this disease: that produces catarrh and rheumatism. But if a man allow himself to be thoroughly chilled—lie out all night, and be so paralysed and chilled—most probably the reaction will bring on pneumonia. Pneumonia is under the influence of the secretions. It is characterised, as we all know, by an absence of the chlorides and sulphates in the urine; and correlative with this suppression of the chlorides in the urine is the fact that in cases of pneumonia they are found in excess in the lungs.

The general view, then, which I take of pneumonia points to its classification as a blood-disease—one which affects an important part of the vascular system, and of the blood circulating in that system. In this view the suppression of the chlorides must also be kept in mind. In the first stage of pneumonia—which we consulting physicians in this day have little opportunity of seeing—I regard bleeding as the great remedy. I have seen nothing lately in the experience of disease which induces me to modify that opinion, or to accept the uncompromising theory of stimulation which is in favour with the school of my late and deeply lamented friend, Dr. Todd. I have seen several cases—not in the period from which I am now selecting examples, but in my earlier practice—of pneumonia in the first, inflammatory stage, where hot skin, crepitation, and strong and frequent pulse have been present, and where bloodletting has arrested all these symptoms, and in the course of a few hours

vanquished the disease; and of such cases I cannot drop the recollection. So of other antiphlogistics in this stage, particularly the potassio-tartrate of antimony, a valuable remedy with or without bloodletting. My experience with respect to the manner of its use differs, however, from that of my illustrious preceptor Laennec, who gave heroic doses. I have found doses of from one-eighth to the half of a grain as useful as the larger doses of several grains, which he was accustomed to administer. Saline diuretics are also very useful; and for this purpose we may prescribe a fixed alkali in combination with nitrate of potash, chlorate of potash, or tincture of squill. This is the treatment which I think appropriate to the first stage of inflammation and congestion before the occurrence of *solid effusion.*

In proportion as solid effusion takes place we want other remedies. The pulse alters, the skin cools, and the febrile orgasm subsides. At this stage general antiphlogistic treatment fails. Local depletion by leeches or cupping is very useful, and so also is counter-irritation by blistering. Here tartarised antimony fails, and mercury begins to be useful. It is not till the cholagogue action of mercury is obtained that its full benefit is felt; but the value of this remedy, carried on to the production of this effect, has been very apparent to me, during my experience, in the stages of effusion and hepatisation. But as the circulation flags, you need other aids; or, indeed, if from the first the disease be of an asthenic or typhoid type, you need stimulants, which, when judiciously employed, assist in the resolution of the solid effusion.—*Lancet, April* 5, 1862, *p.* 346.

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## 24.—THE CHRONIC RESULTS OF PLEURISY AND PNEUMONIA.

By Dr. C. J. B. Williams, F.R.S., &c.

*The Chronic results of Pleurisy and Pneumonia* are oftentimes of very serious import, and require to be carefully distinguished. The most common result is that, the consolidation not being cleared away, deposited matter is left behind, which ultimately undergoes tubercular degeneration. In other cases the result is condensation of the vesicular lung-tissue and dilatation of the bronchi. Owing to the condensation of the vesicular tissue, the air does not enter the cells with facility; but the ribs, muscles, and motory apparatus of the parietes continue to act with vigour, driving the air into the impermeable lung-tissue. The necessary mechanical consequence of this is that the air, acting strongly upon the walls of the tubes into which it is impelled, produces dilatation of the bronchi. This condition of condensation of

the vesicular tissue, with dilatation of the bronchial tubes, is apt to be mistaken for phthisis. I have formerly pointed out this result of pleurisy and pneumonia, and explained the manner of its origin and its diagnosis.

It is produced, as I have said, in a purely mechanical manner by the action, on the walls of the tubes, of the air which is driven into them, but cannot penetrate the impermeable lung. The physical signs resemble in many respects those of phthisis. There is the dense, dull lung-tissue, absence of vesicular breathing, pectoriloquy, and tubular, or even cavernous breathing. The diagnosis is difficult, but may be aided in the first place by observing the situation. The signs are not at the upper, but at the lower and central, parts of the lung, or at the side of the thorax; and the dulness is very considerable. The opposite conditions prevail in phthisis. Then, as to the general symptoms, there may be with all this a good deal of *embonpoint*, and a ruddy aspect of health, which do not comport with so considerable a degree of phthisical disease. Also, in watching the progress of the case, you may observe that the malady does does not seem to advance and affect the constitution as in tubercular disease. Such a case, in my notes, I saw first in December, 1848:—A gentleman, aged seventy-one. He had a cough of two years' standing, which had set in after a sharp attack of inflammation. It was supposed to be phthisical. However, he was a portly man, of healthy aspect. Amongst the physical signs were dulness in the lower part and up to the centre of the right lung, and signs of cavities; sometimes the dry signs, and sometimes moist gurgling. He expectorated purulent matter; but he lived on, and died last month aged between eighty-five and eighty-six, and on examination there was found the anatomical condition which I have described as giving rise to these symptoms—condensation of the lower part of the lung, with dilatation of the tubes.

But I should say that I have seen the consolidation in such cases undergo tubercular degeneration, and go on to phthisis, ending fatally. Then, too, when the deposit is considerable and unhealthy, and undergoes retraction to a great extent, it may, under a generally cachectic state of the system, end in death, commonly immediately due to dropsy.

The expectoration in these cases of condensed lung with dilated air-passages is very commonly offensive. This is owing to the subversion of the process by which nature provides, in the healthy state, so beautifully for the immediate passage upwards, and expulsion, of the secreted matters. It is due to the retention of the matter in the dilated and weakened tubes: just as in ozæna the most offensive odour is generated, not always from an actually diseased condition of the parts, but

from the mere retention of a plug of muco-purulent matter, which unergoes decomposition. This fetor may be corrected by inhalations.—*Lancet, April* 12, 1862, *p.* 374.

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## 25.—ON GANGRENOUS ABSCESS OF THE LUNG.

By Dr. C. J. B. Williams, F.R.S., &c.

*Gangrenous Abscess of the Lung* is one of the most serious consequences of inflammation. Contrary to Laennec, I consider it due to inflammation producing an obstruction in the circulation and nutrition of some parts of the lung. This I take to be the cause of this gangrenous destruction, and not the existence of an intense and peculiar inflammatory action. I have here the notes of the case of a gentleman who was swimming in the Thames, and got beyond his distance. He became exhausted and severely chilled, and was attacked with pneumonia. When I saw him there was a marked degree of fever and exhaustion, and fetid expectoration. This is a remarkable symptom, in respect to which there is an observation which I wish to make on a point of diagnostic value. When first expectorated, the matter expelled is abominably offensive; but when it has accumulated for a short time in the sputorium it acquires rather a pleasant odour. I have often pointed this out to students. The narrow boundary which divides perfumes from the most unpleasant effluvia is very well known, and some choice and agreeable scents are manufactured by inducing chemical change in very rank and foul-smelling substances. The peculiar and pleasant smell which this expectorated matter acquires after a short time is in no small measure diagnostic, and in itself points to the character of the disease; the odour is very nearly that of cowslips. Sometimes sloughy matter is expectorated—actual gangrenous *débris* of lung-tissue. This was the case with the above patient, who made a good recovery, however, by the end of about six months.

Another symptom worthy to be noted in the cases of gangrenous abscess of the lung is the violently convulsive cough. This cough is comparable in its violent convulsive efforts with that of whooping-cough. It is characteristic of the energy with which Nature endeavours to get rid of the offensive matter. I mention whooping-cough, and I may say that the parallel is one which may be borne out. I believe it also to be the result of a poison, and that the disease is best treated by remedies which attack the poison where its energy is located—in the trachea and air-tubes. So in the intestinal tube, an analogy may be observed if we refer to the case of dysentery. A characteristic feature is the excessive and violent straining of the intestinal canal to get rid of the poisonous matter.

The treatment of gangrenous abscess of the lung may be antiseptic, in order to counteract putrescence, and directed to allay the violence of the cough. I have frequently employed the dilute nitro-muriatic acid in doses of from forty to sixty minims several times a day, with the effect of counteracting and preventing the spread of the fetor. It is better to give the acid in quite full doses, and larger doses than the above may be given by combining it with glycerine, which has the effect of sheathing the acid, and is itself antiseptic. Fumigations may be employed with advantage, and especially of creasote, or the inhalations of creasote and chloroform. It is necessary to keep up the nutrition of the system.—*Lancet, April* 12, 1862, *p.* 373.

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## 26.—ON PNEUMONIA.

### By Dr. Edward Copeman, Norwich.

In the sthenic form, pneumonia attacks for the most part those who *seem* to be in the enjoyment of good health, but who are plethoric, full of blood, and in fact verging upon any disease of which hyperæmia would be a predisposing cause. A person in this condition is exposed to some exciting cause of disturbance to his lungs, probably either cold or over-exertion. If the chest be long exposed to the direct influence of cold, the blood will be driven from the surface and accumulate in the internal organs; if over-exertion be the cause, the lungs will be overfilled with blood by increased action of the heart. This active congestion of the lungs produces more or less of shock to the system, and impedes the ready flow of blood through the vessels of the organ affected. This impediment is increased by the tenacity of the fibrine which such blood contains, and a free circulation cannot be again established until the blood is relieved by a deposit of some of its fibrine and an increase of its watery constituents. Thus fibrine is thrown out by nature to relieve the obstructed circulation, producing consolidation; and if the vis medicatrix be powerful enough to bear this temporary interruption to the vital processes, the deposit will be reabsorbed when the congestion no longer exists. Of course a good deal of agitation of the system will have accompanied these changes; and probably a natural diaphoresis or expectoration, or flow of urine, or diarrhœa (though in these cases seldom the latter), will materially assist the power with which our bodies are so mercifully endowed, that of constantly tending to restore the healthy balance when disturbed by disorder or disease. Now in such a case as this, nature will often accomplish a cure with the aid simply of diluent drinks, avoidance of heavy food, and keeping the surface at a uniform and perspiring temperature. But on the other

and, the cure would be much accelerated, rendered more safe nd certain by bloodletting at the outset; or by antimonial dia- horetics, and nitric ether to excite the action of the kidneys, r both these combined. The former at once diminishes the olumn of blood, and, if adopted quite early, anticipates the ffusion into the air-cells by rendering it unnecessary; the latter ccomplishes the same purpose indirectly by means of the skin nd kidneys, though not always in time to prevent a certain mount of deposit of fibrine in the lung. However, even in his case, provided the congestion is relieved, there will be no ncrease of effusion; and what has already taken place will ither be naturally absorbed, or its absorption may be hastened nd secured by the aid of mercurial action. Here again we rrive at a point in dispute at the present day, viz., the action f mercury in the treatment of inflammation. But setting aside heory for a moment, does any practitioner of experience doubt he power of mercury to remove the products of inflammation? Can any one question the fact of its power to remove deposits f lymph and pus, who has witnessed its effects in iritis and ypopium? Here its effects are visible, definite, unmistakable. Can it be doubted that it produces the same effects in other rgans? No—in these matters, experience must guide us; and will fearlessly undertake to say that in cases of sthenic pneu- nonia, where the fibrinous deposit in the substance of the lungs equires to be quickly removed, the object will be obtained most ffectually (if it can be obtained at all), by a discreet employ- ment of mercury; and this, with less detriment to the constitu- ion than would arise from the prolonged continuance of the athological condition for which it is employed.

But how are to deal with other kinds of pneumonic inflamma- ions—asthenic—secondary—recurrent—lobular? For these ccur usually in the course of fevers, or other diseases of debility, nd do not depend upon hyperæmia, or upon a too highly fibri- nated condition of the blood; they are, however, like the sthe- nic, dependent upon *retarded circulation* through the lungs, or n other words, *congestion.*

In many instances, as in fevers, the blood contains poisonous ngredients which diminish nerve force, and deprive any organ f the power of resisting exciting causes of disease.

With respect to the lungs, for instance, if cold be taken, there nay not be nerve force enough to resists its effects, and conges- ion will be the consequence; but is this a kind of inflammation o require loss of blood? The quantity of blood is not in excess, ut it lacks the healthy condition by which it stimulates the eart and arteries to propel it equally through the body; and he best way of relieving these asthenic local congestions is to xcite additional nerve force by internal stimulants, such as mmonia, brandy, &c.

But there are also intermediate cases in which pneumonia is neither dependent entirely upon hyperæmia, nor upon poisoned blood; but in which the constitutional power is so slight and the natural resistance to the causes of disease so imperfect, that, on exposure to exciting causes, congestions and inflammations may take place simply for want of nervous power to resist them. In these cases, the blood, although not diseased, as in fevers, is neither superabundant, nor does it contain an inordinate quantity of fibrine, so as to require either blood-letting or the cutting off of supplies; and in such cases a combination of a diaphoretic treatment to relieve the pressure upon the lungs, and stimulants to force the blood through them without delay, will, I think, be found the most efficacious. I also believe that these last cases are less likely to recover of themselves, than the first I mentioned—the sthenic—for want of that natural vital power without which no severe diseased action can be overcome. In all three of these conditions—the sthenic, the asthenic, and that consequent upon diseased blood from fevers—the blood, when retarded in its circulation through the lungs, produces the same physical signs and symptoms: transudation into the air-cells, cough, dyspnœa, pain in the chest, pyrexia, coloured expectoration, and, at last, consolidation of the lung. But, although the symptoms are very similar, in each case enabling us to diagnose pneumonia, yet, as the causes of them and the early pathological conditions vary in each, so we may reasonably expect the necessity of varying the treatment accordingly. It would be taking a very narrow view of the question to say that, because the disease is *pneumonia*, we must therefore treat it by blood-letting, or we must *not* treat by blood-letting, or it is better to let it alone, for it will get well of itself. We can have no such definite rule of practice as this in our profession; we must be guided in our treatment by well grounded general principles; and the great art we have to learn is to be able to modify those principles in detail to suit the varying exigencies of those pathological conditions included in the general name of the disease.

If we are called early to a case of pneumonia, when the attack is sudden and severe, the patient young, plethoric, and not the subject of any constitutional disease, we should best relieve the patient, and save him the ulterior changes belonging to the disease, by early and decided blood-letting.

In asthenic cases *uncomplicated by other disease*, I have often seen great relief afforded in the early stage by local blood-letting, aided by diaphoretics; taking care at the same time to give either tonics or stimulants, or both, should the *general* condition of the patient seem to require it.

In asthenic cases occurring in persons *labouring under strumous and cachectic states of system*, even local bleeding may be danger-

us, and will be seldom if ever required; for, instead of being n excess and highly coagulable, the blood is poor and watery; nd although it readily exudes, the consequent filling up of the ir cells is less dangerous, and expectoration more easily takes lace; we may safely take more time about the case, the patient ill not be so early threatened with apnœa, and our surest reme- ies will be those which give tone to the general system, aided y counter-irritation and medicines of diaphoretic and diuretic roperties. In these cases, as well as in those which occur in evers, there is less need of mercury to effect the absorption of ne effused matter; for, containing less plastic material, it is nore freely expectorated during the attack, and more easily bsorbed afterwards, provided we have been able not only to elieve congestion but to give increased tone and nervous power o the whole body.

Where pneumonia has arisen secondarily in the course of yphus and other fevers of a low type, I have always found it the ost successful practice to trust, as far as medicines are con- erned, to the appropriate treatment of the fever generally; and o limit the special treatment of the local disease to fomenta- ons and counter-irritation by turpentine, blisters, or other imulants.—*British Med. Journal, Feb.* 1, 1862, *p.* 113.

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## 27.—ON PLEURISY.

By Dr. C. J. B. Williams, F.R.S. &c.

The essential distinctions between pneumonia and pleurisy I eed hardly dwell upon. Pneumonia I have regarded as a blood isease; pleurisy is essentially a local disease. It is dangerous, ot from its affecting the blood generally, but from the effects of ne local effusion oppressing the lung and otherwise interfering ith the respiration. The dangers from effusion are not much be dreaded if that effusion be not very copious, or if, being pious, it is simple; so that we are able to regard pleurisy, nder ordinary circumstances, as one of the diseases over which e have a great command, and in which we commonly secure ne most complete form of success. At the outset of the disease, eeding will sweep it away; it will arrest the incipient inflam- atory action, cut down the pain, and avert the maturer stages the attack. But after a few hours, when effusion has set in, ne case is altered. This requires the most elaborate treatment, oth local and general. The general treatment involves an ppeal to all the emunctories, the free use of diuretics, and the dministration of mercury. It is important to keep in view the ffects of considerable effusion, not only in oppressing the lung nd interfering with its expansion, but in making pressure on

the heart and great bloodvessels. I have just come from a child, where, from the quantity of fluid effused, the heart is pushed over and displaced, and the vessels at the root of the neck are evidently seriously pressed upon. I consider that child in danger from the mere quantity of the effused fluid. The quality may be a source of danger as well as the quantity. Where the effusion is of a purulent character there are several dangers. There is the chance of purulent absorption; the depressing influence of pent-up matter on the system; the tendency of the collection to penetrate and make its way through various organs. Other evils may flow from the effusion of plastic lymph. The formation of supple adhesions may not be practically very troublesome; but where cacoplastic lymph is thrown out contraction occurs, and often gives rise to displacement, obliteration of vessels, and other lesions of serious and inconvenient character. So that here also we must make a division into complete and incomplete recoveries.

Complete recovery is the most ordinary and most frequent result.—*Lancet, April* 12, 1862, *p.* 374.

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## 28.—ON THE TREATMENT OF TUBERCULAR HÆMOPTYSIS.

By Dr. William Brinton, Physician to St. Thomas's Hospital.

Of course pulmonary hemorrhage has the usual long list of specifics, each of which, in the eyes of its partizans, is so efficacious that one can hardly avoid wondering anybody should be so foolish as to die of hemoptysis at all. Alum, turpentine, mercury, the mineral acids, acetate of lead, sulphate of copper, tannic acid and a host of analogous astringents, ipecacuan, tartar emetic, the external application of ice, figure amongst the favourite remedies of this kind. The variations of diet have been scarcely less striking than those of drugs; the patient who would have been nearly starved twenty years ago to favour coagulation of the bload in the ruptured vessels, being now sometimes crammed with food, and drenched with stimulants, at frequent intervals, in order to "keep up his strength."

Warned by such discrepancies, I think we are justified in regarding as inconclusive what are often termed the "teachings of experience"—namely, the mere events which follow the adoption of this or that drug or dietary in the treatment of the malady. Here, as elsewhere in the study of therapeutics, it is our first duty to check the uncertainty or bias which must sometimes beset the conclusions of the most judicial intellect, by a study of the nature and history of the disease, and by the physiological action of the remedy. What *is* hemoptysis, or

ne one hand? What does the particular drug do to the healthy ody, on the other? Unless we can at least partially answer ne first question, it is difficult to see how we can conclude any emedy really useful. Unless you can answer the second, and oint to at least an analogy between the effects of the drug in ealth and in disease, it is nothing short of a very complete and rge account of the natural course of the malady that would nable us to accept any recovery as a cure. True it is that uinine cures most forms of ague, and mercury some forms of yphilis, by agencies which are quite inexplicable from the mere nysiological effects of either drug respectively. But here our nowledge of the course of the two maladies, unmodified by neir respective specifics, proves the reality of the cure. It is ot so much a multiplication of coincidences, as an asseveration f cause and effect, which is thus afforded us.

Looking back to the variations of hemoptysis already alluded , and eliminating the casual bleedings of pleurisy, and the ore essential, but dilute, hemorrhages of pneumonia, you ill remember that we noticed the hemoptysis of pulmonary ubercle as presenting itself in three forms of very different equency and gravity. The afflux, or active congestion, of the rst stage of tubercular deposit, and the obstruction and erosion the seond stage, affect chiefly the smaller vessels of the diseased rgan. The large ulceration of the third stage occasionally lays pen a blood-vessel of considerable magnitude. The first two e of frequent occurrence; indeed, the second is, in greater less extent, almost a necessary incident of the malady. The tter is fortunately rare.

Now, of these two commoner varieties of tubercular hemop- sis, it may be unhesitatingly affirmed, that in a very large r-centage of their cases the bleeding would cease sponta- eously. Indeed, inquiry amongst the poorer classes who form e out-patients of our hospitals shows that hemorrhage of this nd commonly ceases in a day or two: not only without edical advice, but often in defiance of the want of that perfect st and unstimulating diet which, apart from drugs, constitute e best means of favouring its arrest. And I need hardly say at, in such a process, Nature is only stanching an internal eeding by the same means which she ordinarily employs to rest an external one; means which, though in the case of ese pulmonary vessels they have to fight against additional stacles in the shape of the alternate suction and compression breathing, and the agitation of cardiac movement, are yet in e main sufficient.

Hence to assert that these frequent and scanty hemorrhages nerally cease after the administration of any of the above ugs is to state a fact which, the moment it is made to sustain

an assertion of their specific operancy as styptics, may be challenged as an instance of the fallacy "*post hoc, ergo propter hoc;*" for the fact is utterly insufficient to sustain any such conclusion. The bleeding may have ceased spontaneously; a recovery which, supposing the instincts of the patient have been allowed full play in the matter of rest and diet, is even additionally explicable. Strictly speaking, the mere coincidence scarcely entitles us to affirm more of styptic power in the drug than if the bloodvessels concerned had been those of a cut finger.

In all cases of hemoptysis, the first indication of treatment is suggested by the pathology of these, and indeed most other, morbid hemorrhages. That the bleeding is generally preceded and accompanied by great congestion of the bloodvessels nearest the lesion is a fact about which there can be no doubt whatever. And that the removal of this condition can often be effected by smart aperients is another fact which may be as unhesitatingly asserted. Nowhere are these statements better verified than in the digestive canal; where, for example, you may sometimes see in the submucous areolar tissue that the nodule of deposit which has excited a copious hemorrhage, is surrounded by an inch or two of deep velvety congestion with a well-defined margin towards the neighbouring healthy structures; and where the virtues of drastic purgatives in melæna constitute an experience as old as the days of Hippocrates. And of all purgatives which one may give with this purpose, the old-fashioned dose of blue-pill or calomel, followed by a black draught, seems really the quickest and most efficacious. Under all ordinary circumstances its administration, and, if needful, repetition, should be a prominent feature of the treatment.

Then as to the drugs for checking hemorrhage, by their astringency or otherwise. There seems to be a kind of notion in the minds of some therapeutical writers, that such drugs as turpentine, alum, gallic acid, acetate of lead, sesquichloride of iron, &c. &c., when taken into the stomach, are received into the blood in quantities sufficient to communicate to this fluid those styptic properties which they undoubtedly possess when applied to an external wound, or to a bleeding stomach, or perhaps (through the urine) to a bleeding bladder. But I know of nothing to confirm such a notion. And I think that those who would look the facts of therapeutics sturdily in the face (which, not wishing to die a homœopath, I intend to do), would scarcely think twice about the matter. At any rate experiment would soon afford some analogical answer. Stir up ten grains of gallic acid, or ten minims of tincture of sesquichloride of iron, in ten or twenty pints of blood, and I think the resulting

olution would be a styptic of a somewhat Hahnemannic degree f diluteness; not nearly so potent, one may anticipate, as the ompound tincture of benzoin which, forty years ago, was the avourite application of some old-fashioned country surgeons to tanch the bleeding of a superficial wound, and which, in its urn, modern surgeons have practically superseded by a little atience and cold water.

Of other remedies for hemoptysis one may speak more respectully, though with some qualifications. Ice, for example, seems ccasionally of service. But the internal congestion invariably roduced by great external cold suggests that, save where the ource of the hemorrhage is near enough to the surface to be irectly affected by it, its benefits may be more than questionble. And of ipecacuan, which many excellent authorities think ighly of, in small and frequent doses (a grain every ten or fifeen minutes), I can only say that I have known its use followed y great exhaustion and nausea, and a very protracted convalesence, but (what is more to the purpose) that over and over again have known it utterly fail in any degree to moderate such a emorrhage.

In short, all else that I have to say of such remedies might lmost be summed up in the statement, that it is in the terrible emorrhage of larger eroded vessels, and therefore of what is ften advanced phthisis, that we have the most searching test f the value of any drug of this kind. Presuming we have uch a means, we must very frequently use it. For it is often mpossible to tell beforehand whether a slight oozing is not he commencement of a more considerable hemorrhage, such s (directly or indirectly) endangers life. And I believe that re have such a remedy, for the majority of patients, in *igitalis.*

The grounds for this strong personal conviction I find chiefly n the fact, that I have repeatedly seen profuse and alarming emoptysis, which had resisted many other means of treatment, ncluding a most judicious diet and all the other drugs above numerated, yield to this active remedy, given so as to produce s well-known specific effects on the pulse. And not only so, ut, in several cases, the interruption of the drug seems to have ermitted the return of the hemorrhage, to be again arrested y the resumption of the digitalis. Our patient in bed No. 9, f Jacob's ward, so far illustrates this point as that, thrice over, ie gradual disuse of the digitalis, at intervals of two and three eeks from the previous cessation of the hemoptysis under the se of the drug, has been followed by fresh attacks. And the ery same physiological effects which confirm the efficacy of igitalis may suggest the details and qualifications of its use. ray remember that it is too much of an edged tool to be care-

lessly handled; and hence that, if you cannot or will not take the trouble to watch over its administration, you had best not give it at all. From thirty to ninety minims of the officinal tincture daily, in four or six doses, is as much as is generally requisite; and (as has been pointed out by Sir Henry Holland in that chapter of his classical work devoted to the consideration of this drug) it is often not the robust strong man who bears or demands the largest dose. Keep the patient quiet, and in the recumbent posture, an attitude for which the drug is a double argument in this malady. Judge, by repeated inquiry, how far, or how quickly, the digitalis is acting on the pulse; and, as a rule, reduce the dose as soon as the pulse has dropped to the slow rate (30 to 50 or 60 per minute), which is the usual result of its action both in health and in disease. Lastly, for those who like polypharmacy, the drug combines well enough with dilute sulphuric acid during the attack, and with sesquichloride of iron during the convalescence, without substantial detriment to its own much greater virtues.—*Lancet, Nov.* 30, 1861, *p.* 516.

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## 29.—ON THE PATHOLOGY OF ASTHMA.

By Dr. Hyde Salter, F.R.S., Assistant Physician to Charing-Cross Hospital.

In the Dublin Quarterly Journal of Medical Science for May, 1861, there is an able article by Dr. Kidd, of Dublin, on the Pathology of Asthma, in which he advocates a theory of the disease which is so plausible, and with which so many of its phenomena might appear to be consistent, but which is in my opinion at the same time so erroneous and would be so obstructive, if adopted, to the progress of our knowledge of the disease and its rational therapeutics, that I should very much regret if the arguments in support of it were considered unanswerable by the numerous readers of that journal, and should very much wish to expose, in the same candid and courteous way in which Dr. Kidd's paper is written, the untenability of the views he advocates.

Dr. Kidd's theory is that asthma essentially consists in an irritation of the cerebro-spinal nervous centres, and that its phenomena immediately depend on a state of tonic contraction of the muscles of inspiration. This is a theory that I have mentioned and controverted in my book; but the theory there referred to differs from that of Dr. Kidd, in that he includes among the muscles of inspiration the bronchial muscle. Dr. Kidd's statements of his views, which, at the cost of a little length, I think it better to give in his own words, is as follows:—

"The circumstances to which I would draw particular atten-

ion are, that instead of the thorax being constricted, and the diaphragm and abdominal viscera being drawn up into the chest, causing a hollow at the epigastrium generally described as occurring during the fit of spasmodic asthma, it is found, on careful observation, that the thorax is distended to the greatest extent—that it measures from two to three inches more in circumference than during the interval,—that the intercostal spaces are widened,—that the diaphragm is pulled down to the fullest extent, so as to produce great fulness of the abdomen, and cause the heart's impulse to be felt at the scrobiculus. The sounds, moreover, afforded by percussion over the thorax, instead of being dull are found to be clear, and it is as evident that the whole chest is full of air; and on stripping the patient, it is seen, that not only are the muscles of ordinary inspiration in a state of violent action, but that those of forced inspiration are also called into requisition, distending the thorax to the utmost."

After quoting some passages from my book in confirmation of the above description, and remarking that, in consequence of adhering to the exclusive and isolated principle that asthma depends altogether on the spasmodic action of the bronchial muscles, I do not recognise the teachings of my own clinical observations, Dr. Kidd thus proceeds:—

"In birds, who have no diaphragm, and who have the ribs connected by osseous prolongations with a sternum so large as to cover almost the entire front of the body, the natural state resembles closely that of the human subject when labouring under asthma. 'The natural state of this bony framework,' says Dr. Carpenter, 'is such, that when no pressure is made upon it the cavity it encloses is in a state of distension; and the state of emptiness can only be produced by a forcible compression of the framework, through an exertion of muscular power. In the state of distension, therefore, which is natural to the cavity of the trunk, the lungs are expanded, and fill themselves with air, which they draw in through the trachea; and this condition they retain till, by the action of the external muscles on the bony framework, the cavity of the trunk is diminished, and the air is expelled from the lungs and air-sacs, which are again filled as soon as the pressure is taken of.' Now, during the fit of asthma, the state of the thorax and the mode of respiration closely resemble that natural to birds. The chest is distended to the fullest extent, being kept so by the spasmodic action of the muscles of inspiration. When the patient desires to breathe, he must first bring a strong voluntary effort to the aid of the muscles of expiration, so as to compress the thorax, and as soon as he relaxes this, the muscles of inspiration, being in a state of tonic persistent spasm, expand the cavity again, and cause fresh air to rush in through the trachea. In the healthy state

of the human subject there is always a rest after each expiration. We have first an inspiration, then an expiration following immediately, and then a post-expiratory rest, occupying a time considerably longer than that of the inspiratory and expiratory movements combined. In Asthma this post-expiratory rest is lost; the moment the expiration is completed, the inspiration begins—there is no pause. In fact, as has been already remarked, it seems plain that the muscles of inspiration are, during the fit of asthma, in a constant state of tonic contraction; and that the great difficulty is to empty the chest, so as to allow of its being refilled with fresh air. For this purpose the muscles of expiration are constantly contending with those of inspiration, and require the aid of a strong voluntary effort to overcome them. In consequence of the state of distension in which the chest is during the fit, and of the necessity of overcoming the tonic spasm of the inspiratory muscles, it occurs that the relative length of inspiration and expiration is reversed; instead of the inspiration being longer than the expiration, as is normally the case, the expiration is longer than the inspiration,—four or five times as long; and at the same time the inspiratory movements are infrequent, not more than nine or ten in the minute.

"While an examination of the phenomena of the asthmatic fit proves that the entire muscles of inspiration are in a state of spasmodic action, many circumstances show that the bronchial muscles are also concerned, and are, too, in a state of spasmodic action. This is most easily demonstrated in slighter attacks, where, on applying the ear to the chest, it is found that the respiratory sounds are heard in an undulatory sort of way, marking the dilatation and contraction of the bronchial tubes, and that the points of constriction are constantly changing their site."

In the above passages two things are endeavoured to be shown: First, that my theory of asthma is erroneous; and, secondly, that the disease essentially consists in tonic spasm of the muscles of inspiration. Let me, as briefly as possible, show that the pathology of asthma I advocate is consistent with all the clinical phenomena which the reviewer cites, and then point out certain facts which are incompatible with the views he advocates.

The clinical phenomena on which he principally relies in support of his theory are:—

The chest-distension;

The locked-up condition of the air; and

The special expiratory difficulty which gives the prolonged expiration.

Now, I maintain that these three conditions are just such as spasm of the bronchial tubes would produce.

It would create the first—the chest-distension—simply by creating the demand for air. In all diseases, or conditions, in which the aëration of the blood in the lungs is in arrears, chest-distension is present; in bronchitis, croup, laryngitis, violent exertion, I have noticed it, and always in proportion to the dyspnœa. It depends on an involuntary and instinctive effort to fill the chest, and is an inevitable result of the law that in ordinary breathing associates inspiratory effort with the *besoin de respirer*; when the one is exalted so is the other. Dr. Kidd says that if the tubes were contracted, this additional quantity of air, necessary to produce the state of distension, could not be got in. I cannot admit this; we know that air *is* got in and out at each respiration; and a slight excess of inspiration over expiration would, in a few respirations, give any amount of chest-distension.

How bronchial spasm would produce the locked-up stagnant state of air in the lungs, I need not explain.

The third condition, the special difficulty and prolongation of expiration, is produced by the bronchial spasm thus :—

It is manifest that anything narrowing the bronchial tubes must offer a bar to the ingress and egress of air equally—must equally affect inspiration and expiration; that is, supposing these acts are performed by equal forces. But these forces are *not* equal; the *in*spiratory force is a strong force—muscular action, while the expiratory is a weak one—elastic resiliency; thus the obstruction is easily overcome by the one, and with great difficulty by the other; the muscular inspiration quickly draws the air in through the narrow tubes, the passive expiration slowly and tediously drives it out again. When the same kind of force as has performed the inspiration comes to the assistance of the expiration, namely, muscular action, the air is immediately pumped out and expiration completed, as is seen in a form of respiration characteristic of the intensest asthma, where a tedious and almost imperceptible expiration is suddenly terminated by an expiratory jerk; in the first half of such an expiration the air is driven through the narrowed tubes by the ordinary expiratory force—elasticity, in the last by the extraordinary expiratory force—muscular action. The simple reason, then, why in asthma expiration is so much more prolonged than inspiration is, that unequal forces unequally overcome the same obstruction.

Let me now, in the second place, cite the facts which I believe to be perfectly inconsistent with Dr. Kidd's theory.

1. In the first place, he says that the bronchial muscles are muscles of inspiration; that at each inspiratory act the bronchial tubes are contracted, and relaxed at expiration. "There are," he observes, "few problems in physiology more difficult

of solution than that of the function of the bronchial muscles. The theory as to their use that seems to me to accord with the greatest number of facts is, that they are muscles of inspiration, and, if this can be proved, it will afford a satisfactory explanation of their being associated with the other muscles of inspiration in the production of a fit of asthma. The principal fact on which this theory is founded is the difference between the duration of inspiration and expiration. Fournet says that in health the inspiratory sound is five times longer than the expiratory. Now, if a volume of air occupies a certain length of time in passing into the lungs, and passes out again in one-fifth of that time, it is evident that it must either be pressed out with greater force than it passes in, or the tubes through which it passes out must be wider than those through which it passes in. One or other of these propositions must be true :—(1) Either the force of expiration must be many times greater than inspiration; or, (2) the bronchial tubes must be narrower during inspiration than they are during expiration—*i.e.*, the bronchial muscles contracted during inspiration and the tubes narrower, and relaxed during expiration and the tubes dilated." The former of these suppositions is eliminated by showing that in order to explain the relative lengths of inspiration and expiration by the difference of the forces executing them, it would be necessary to suppose the force of expiration at least ten times greater than that of inspiration; the other alternative, therefore, remains, viz., that the tubes must be contracted during inspiration.

For the arguments against the bronchial muscles being muscles of respiration at all, either of expiration or inspiration, I must refer the reader to my work on Asthma, p. 22. But supposing they were so, as Dr. Kidd imagines, and contracted at each inspiration, relaxing at each expiration, what effect would they have? Exactly the reverse of what Dr. Kidd supposes; they would antagonise instead of assisting it; instead of being muscles of inspiration they would oppose inspiration; for it is manifest that the air cannot be drawn in with the same facility through contracted as through patulous tubes. Indeed, Dr. Kidd's explanation of the prolongation of inspiration (as contrasted with expiration), by this supposed contraction, implies an inspiratory obstruction. One would almost think (what, indeed, I have often observed in writers on the physics of respiration) that Dr. Kidd imagined that the air was driven into the air-cells, not drawn into them, and that the contraction of the air-tubes helped to force it in. But it must never be forgotten that the motive power of inspiration is entirely at the superficies of the lungs, that the lungs themselves are passive, and the parietes of the chest the only active agents. Moreover, if

the law of bronchial contraction were such as Dr. Kidd supposes, and it were in operation during asthma, it would have just the reverse effect of what we see; it would lengthen inspiration: whereas it is expiration that is so lengthened, the relative proportion of the two acts being entirely reversed. Thus Dr. Kidd's own theory (unless he supposes that during asthma the time of the contraction of the bronchial tubes is exactly reversed) is inconsistent with that very prolongation of expiration which it ought to explain.

2. In the breathing of asthma we have evidence that at inspiration there is a partial vacuum formed in the chest, that the lungs are unable to expand to the degree to which the parietes are endeavouring to expand them, that the air is rarefied thereby, and that the atmospheric pressure thus not being balanced, forces in those parts of the parietes that are yielding. Only in this way can be explained the deep sucking in of the surface beneath the ribs, between the origins of the sterno-mastoids, and behind them, between them and the scaleni, and in the intercostal spaces, which we see at each inspiration in asthmatic dyspnœa; the drawing-in at the attachment of the diaphragm produces quite a constriction, and at the root of the neck deep pits are formed at the situations mentioned every time the sufferer tries to tug in the air. This phenomenon is quite inconsistent with the difficulty depending on tetanic rigidity of the parietes, and throws the *onus* entirely on defective air-supply.

3. The kind of contraction of the respiratory muscles in asthma is not that of tonic spasm, it is intermittent, regular, rhythmical, and co-ordinated. At inspiration the muscles start into prominence, at expiration they disappear. We see just the same thing in the breathing of laryngitis, and, in a less degree, in the violent breathing after strong exertion.

4. The frequency with which asthma is due to diseases affecting the air-passages, such as measles, hooping-cough, bronchitis, &c., points to the bronchial system itself as being primarily affected, and not to the nervous centres.

Lastly, although this is the least important of all the arguments, Dr. Kidd himself admits that in some instances "the disease arises very probably from spasmodic contraction of the bronchial muscles alone, caused either by the direct irritation of the bronchial muscular fibres, or through the medium of the nerves and microscopic ganglia." Now, if in some cases, why not in all? If the phenomena of asthma are in any case explicable by simple bronchial spasm, where is the necessity for calling in another system of explanations? There is always an *à priori* objection to invoking two theories to explain the same thing.

There are two or three other points of interest, suggested by Dr. Kidd's paper, both in relation to the pathology of asthma and the physics of respiration, the consideration of which I must reserve for a future communication.

In order to reconcile the undoubted existence of spasm of the bronchial tubes in asthma with Dr. Kidd's theory that asthma consists essentially in spasm of the muscles of inspiration, it is necessary to show that the bronchial muscles are muscles of inspiration. This Dr. Kidd undertakes to do principally from the fact that inspiration is so much longer than expiration. "If," he says, "it can be proved that the bronchial muscles are muscles of inspiration, it will afford a satisfactory explanation of their being associated with the other muscles of inspiration in the production of a fit of asthma. The principal fact on which this theory is founded is the difference between the duration of inspiration and expiration. On analysing our own sensation, or applying the hand to the chest of a healthy person, it is evident that the movement of expiration is much shorter than that of inspiration." The difference is such that Dr. Kidd concludes, from the data he has obtained, either that the expiratory force must be ten times stronger than the inspiratory, or the tubes must be contracted during inspiration; the former alternative not being true, the latter (he conceives) becomes inevitable.

Now, there is a third possible explanation of the relative length of inspiration in natural breathing, which in my opinion is the true one, and which Dr. Kidd has overlooked—it is, that inspiration is an antagonized force, and expiration is not. At the time the inspiratory muscles are distending the chest they are doing so in opposition to the elastic contractility of the lungs and resiliency of the parietes, whereas when these two last named forces empty the chest, they are unopposed and achieve the act at once. The two acts of respiration find, in this respect, an exact analogy in rolling anything up hill and then down again; and to say that because expiration is so much shorter than inspiration, the expiratory force must be so much stronger than the inspiratory, is like saying that the force that rolls a stone down hill is greater than that which rolls it up, because it is rolled up slowly, and rolled down quickly; whereas we know that the force that rolls a stone up hill must be greater than that which would roll it down (gravitation,) because it antagonises it and overcomes it. In the same way the inspiratory force must be stronger than the expiratory, because, it antagonises it and overcomes it; and yet it acts more slowly. The elastic contractility of the lung is, like gravitation, a constant force acting in one direction, and anything that effects a movement in an opposite direction must do so in direct antagonism

to that force, and because it is stronger than it and overcomes it; and thus the force that enlarges the chest is not the inspiration force *per se*, but the excess of the inspiratory over the expiratory force. The force of expiration (elastic contractility of lung) is as much in operation during inspiration as at any other time, indeed more, becomes increasingly powerful as inspiration proceeds, because the more the lung is expanded the more does its elastic reaction come into operation, so that the expiratory force has acquired its greatest intensity at the end of an inspiration. Inspiration is a contest of two opposing forces in which one gets the better; but its mastery is not for a moment uncontested. Expiration is the unopposed action of a single force. The arm that pulls a bow is stronger than the bow, but the recoil of the bow takes much less time than the bending it. Only in this way, by bearing in mind the co-existence of two opposing forces in inspiration, the constancy of the expiratory force, and the intermittentness of the inspiratory, can, in my opinion, the physics of the inspiratory movements be correctly comprehended. But once clearly understand and admit this, and all necessity for excess of expiratory force as an explanation of rapidity of expiratory movement ceases.

The mode in which Dr. Kidd conceives the contraction of the bronchial muscles would assist inspiration is as follows:—"The object of inspiration is to carry a current of air into the air-cells. This is effected by enlarging the cavity of the thorax relatively to its contents:—1st. By dilating the cavity. 2nd. By lessening the bulk of its contents. This latter is effected by the bronchial muscles, which narrow and shorten the bronchial tubes, leaving extra space for the enlargement of the air-cells. The narrowing of the tubes assists inspiration materially in another way. Though in ordinary respiration there be but twenty cubic inches of air introduced into the lungs and expelled again, we know that in health a quantity of air remains in the lungs after ordinary expiration, varying in different subjects between 117 and 430 cubic inches. The greater part of this is lodged in the air-cells under circumstances most unfavourable for its displacement. By the narrowing of the tubes the displacing force of the current will be greatly increased, and thus important aid given to the essential part of respiration."

This increasing of displacing power, or the existence of a displacing action at all on the part of the inspired air, I must confess I cannot comprehend. The air is drawn into the air-cells from the bronchial tubes because the cells expand, and the amount of expansion of the cells entirely regulates the bronchial current. No more air can be drawn in than would fill the cells. And if the air *were* displaced from the cells, where could it go? Into the bronchial tubes by which it is at

the same time arriving? That would be to suppose two co-existing currents in the bronchial tubes, and that some of the air is setting outwards at the time of inspiration. But in reality the thing is impossible; and the idea can only be based on the supposition that the air is driven, and not drawn, into the air-cells. If we imagine an artificial imitation of the conditions, by placing in an air-pump an expansible bag communicating by a tube with the outer air, we shall immediately perceive that enlargement of this bag by exhausting the pump would be attended with a simple in-rush of air, that there could be no displacement, merely an increment and no counter-current.

The other supposed inspiratory purpose of contraction of the bronchial tubes, viz. that by diminishing the volume of air in the tubes it would increase that in the cells, I admit as theoretically possible; but I cannot admit that it would countervail the great increase of obstruction to inspiration that the contraction of the tubes would involve. In proportion to the contraction of the tubes would be the increased rapidity of the inspiratory current, and Dr. Kidd has himself shown to how great a degree increased rapidity of current increases resistance.

In support of the view that asthma depends on an irritation existing in the nervous centres, Dr. Kidd quotes my observation, that in asthma there is an itching sensation at the sternum and chin, and between the shoulders. Now I must ask, What is the cause of the sense of soreness in the same situation (the sternum and interscapular region) in bronchitis? Is it subjective? Is it central? Or is it reflex, and dependent on a certain condition of the bronchial tubes? And if this last in the one case, why not in both? If in bronchitis, why not in asthma? I have fully discussed in my book the question of this sensation, and believe it to be a very interesting example of what appears to be the law of visceral sensation, viz. that when a viscus is thrown into such a condition as to give rise to a sensation, that sensation is transferred to the superficies in the middle line, at a level corresponding with the irritated viscus. In bronchitis, the tubes are inflamed, and the sensation is soreness; in asthma, they are the seat of spasm, and the sensation is itching.

That asthma may be produced, and is in some rare cases produced, by central irritation, I have not the smallest doubt. I have instanced examples in my book in which such was clearly the case; but that goes no way to show that it is the sole and essential pathology of the disease, nor that the inspiratory muscles are involved; nor that spasm of the bronchial tubes is inadequate to the complete solution of all the phenomena.

Whenever I meet a tenable objection fatal to the bronchial-spasm theory of asthma, I will willingly and at once renounce that theory; but I must confess that I do not think that Dr.

Kidd has succeeded in touching it, nor have I yet, in any direction, become acquainted with any other theory that so well accords with all the clinical phenomena, or that is not open to insuperable objections.

I would at all times much rather state my opinions in a constructive than a destructive form, I would rather be simply didactic than argumentative, and anything like scientific polemics is very distasteful to me. If I could have expressed my opinions otherwise than as antagonistic to Dr. Kidd's I would have much rather done so, but sometimes one is hardly conscious of the arguments in support of one's views till those views are assailed, nor does the necessity of even stating them enter one's head till something opposed to them is broached. Moreover, in the present paper I have been really anxious not only to enforce the bronchial-spasm theory of asthma, but to refute views both pathological and physiological, which I believe to be erroneous. —*Med. Times and Gazette, Nov.* 9 *and* 16, 1861, *pp.* 476, 500.

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## 30.—ON ASTHMA WITH EMPHYSEMA.

By Dr. C. J. B. Williams, F.R.S., &c.

The grouping of asthma with emphysema is not very systematic, but it is a combination which we constantly meet in practice; and there are reasons for classing them together. "Spasmodic asthma" I consider to be rightly so named, notwithstanding what has been said against that title in the course of that long discussion in which Laennec and Bree took an active part. Its essential cause is indeed the contraction of the muscular fibres which enter into the structure of the bronchial walls. The existence of these muscles had not always been clearly demonstrated, but it certainly is so now, and their anatomical characters are demonstrated and defined. I have made a series of definite experiments on this subject, with the effect of establishing the existence of distinct muscular contraction; not mere tonic contractility, but true muscular contraction on stimulus, and followed by relaxation; such contraction as would considerably impede the passage of air through the tubes. There are many kinds of stimuli which will excite this spasmodic contraction in susceptible persons. Most of them are well known: the smell of a stable, of new-mown hay, ipecacuanha, dust. In persons who have that liability, a paroxysm is pretty sure to be brought on by an attack of bronchitis; and this is what we very commonly indeed see and are called upon to treat. The dyspnœa of spasmodic asthma is a wheezing difficulty of drawing breath; that which arises in cases of effusion into the cavities of the chest, and of diseases of the heart or circulation, is gasp-

ing. This wheezing resembles, perhaps, that of bronchitis; and probably in most cases of bronchitis there may be something of spasm in the tubes.

There are various conditions which are coincident with the habitual recurrence of attacks of asthma, and which are connected with it. Among these are—partial consolidation of the base of the lung, enlargement of the bronchial glands, and partial tuberculization of the lung. And in many cases where there have been symptoms such as hemoptysis, and the patient seems to have escaped phthisis, he has been subject to asthma. Sometimes calculous matter has been expectorated; and the post-mortem examination of the subjects of confirmed asthma has often shown the existence of tubercular matter, calcified or otherwise, deposited at the root and apex of the lungs. Sometimes the blood may be thought to be in fault. In children it frequently accompanies an outbreak of eczema of the skin, and either the one alternates with the other, or they are simultaneously relieved. So in adults I have seen it in combination with gout, and the one seems to be relieved by the outbreak of the other. The exciting cause therefore may be supposed to exist sometimes in the blood, as well as in the root of the lung or great vessels.

The ulterior result of prolonged or repeated attacks of spasmodic asthma may be traced in emphysema of the lung. The air which enters the cells with difficulty is also with difficulty expelled; so that the spasm of the tubes easily gives rise to a condition in which we have great resonance of the lower part of the lung, while at the upper part air enters slowly. This condition may accompany more or less each attack, but when they are repeated and prolonged, a permanent pathological change is induced. Spasmodic asthma cannot continue long without giving rise to congestion of the bronchial tubes, and this ends in hypersecretion—itself an additional source of obstruction. This takes place the more readily if, as often happens, the attack is complicated with bronchitis, which perpetuates and keeps up the conditon of irritation and obstruction; and these are the cases which baffle complete cure and become chronic. We have here spasmodic contraction of the tubes, accumulation of the secretions, and inflammation with narrowing of the tubes; so that the longer and more frequent the attacks, the more certain are they to end in emphysema. The process of expiration is impeded, as well as inspiration; and it may be observed, in cases of spasmodic asthma, that, whereas at first the act of inspiration is more difficult, towards the end the expiration becomes more prolonged, difficult, and imperfect. The consequence is permanent dilatation of the air-cells in the part of the lung affected. And in the worst form of emphy-

sema we have not only distension, but the cells are wasted and broken down, and the lung approximated to the reptilian type. This commonly indicates something more than mere mechanical dilatation and rupture; there is an alteration of nutrition. I have noted a considerable number of cases of habitual asthma in persons who exhibit the arcus senilis; and I may say that I regard the arcus senilis as a valuable sign in conjunction with other signs of the degenerative process. It is, then, fatty degeneration of the lung-tissue which aids in bringing about the atrophy and rupture of the cells which I describe.

Asthma is of course not the only cause of emphysema. I have seen persons recovering from pleurisy where the lung has been bound down in parts by retractile bands of plastic effusion. This plastic lymph causing local contraction and stenosis of the air-passages, the lung beyond it becomes partially dilated and emphysematous; the air becomes, as it were, entangled in the cell; and the result of the difficulty of egress is to produce marked emphysema.—*Lancet, April* 12, 1862, *p.* 375.

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## 31.—ON THE ACTION OF THE BRONCHIAL MUSCLES.

By Dr. C. Radclyffe Hall, Physician to the Hospital for Consumption, Torquay; &c.

The perusal in the Medical Times and Gazette of Dr. Hyde Salter's interesting criticism on Dr. Kidd's view of the pathology of asthma, tempts me to say a word in defence of that hypothesis concerning the action of the bronchial muscles, which they both alike reject.

Dr. Kidd considers that the bronchial musches are inspiratory, and that they cause contraction of the tubes during ordinary inspiration.

Dr. Hyde Salter considers them not "muscles of respiration at all, either of expiration or inspiration."

Haller, Reisseissen, Elliotson, and others, suppose that the bronchial muscles act as auxiliary agents in ordinary expiration. Dr. C. J. B. Williams appears to be of the same opinion. In the *Transactions* of the British Medical Association for 1850 (p. 363), I published a paper, in which I endeavoured by experiments to substantiate this view. And, unless I remember inaccurately his remarks in conversation, Dr. Brown-Séquard has come to the same conclusion.

There are then three conjectures at present entertained respecting the function of the bronchial muscles.

1. That they contract in ordinary inspiration.
2. That they contract in ordinary expiration.

3. That they contract only occasionally to expel irritating matters, or in answer to morbid sensations, either in the quick manner of cough, or in the persistent manner of spasm.

This last proposition, apart from its exclusiveness, few will be disposed to deny. Dr. Hyde Salter has excellently well argued that spasm of the bronchial muscles is the *sine quâ non* of true asthma; is indeed the only explanation that will fully work the problem of the disease.

When on each contraction of the heart a wave of blood distends a small artery, the elastic and muscular coats of the bloodvessel yield, and the vessel expands. This answers to inspiration; excepting that, in the case of the circulation, the motor force is from the centre; in that of the respiration, from the circumference. As regards the artery and the bronchial tube, this difference may for the moment be left out of consideration. Immediately after its distension, the artery slightly contracts, and by so doing quickens the onward flow of its contents. This answers to expiration. Galvanise the bloodvessels in a suitable manner, and the small arteries contract. Or, without that, expose the skin to cold, or the mouth to ice, and the same will happen. This tonic contraction of the bloodvessels answers to asthma.

Hence, the view I am contending for assumes that the bronchial muscles contract slightly for every expiration; contract more vigorously and suddenly for every cough; and contract in the persistent spasmodic manner in every case of asthma.

The larynx and glottis expand for inspiration, and contract for expiration. The glottis can contract vigorously and suddenly, as in cough; or in the shape of spasm of more or less duration, in laryngismus, in hooping-cough, and in croup. Laryngismus may be considered as an infantile laryngeal asthma. I assume that the remainder of the respiratory tubing in all these respects follows suit.

The smallest bronchial tubes are the most muscular. The larger tubes have the most of these elastic-spring openers, the bronchial cartilages. Hence, the bronchial muscles will mainly operate in the tubes which lie nearest to the finer and more delicate parts of the lung, the vestibular passages and air-cells.

We will assume that the ordinary excitor to action of the bronchial muscles is the distension of the tube by inspired air. This will take place just after the end of inspiration, when the newly arrived air has undergone expansion by warmth; that is, provided the in-rush be gentle and gradual, as in quiet healthy breathing. But in proportion as the in-rush is sudden, abrupt, and forcible, as when a person is

out of breath from running, will the bronchial muscles act vigorously, not to *promote* inspiration, but to *oppose* it, and so prevent it from inducing more than a certain safe amount of distension of tubes.

In expiration, the compressed air-cells expel a portion of their air with a given force. The expulsion will be quickened by lessening the bore of the exit channel, provided the expelling force remain adequate. And this quickening of exit will take place most precisely where it is most necessary to get rid of foul air speedily; viz., in the smallest bronchial tubes which are nearest to the air-cells; less and less as the tubes become larger, and intermixture of foul with fresh air readier; for it must be remembered that, at the moment when expiration commences in the periphery of the lungs, the larger tubes are still full of unused air.

The objection usually urged against the supposition that the bronchial muscles assist in the act of expiration is, that the contraction of a bronchial tube would oppose, and not facilitate the passage of air out, just as it does the passage of air in. This would be so, provided the bore of the tube were lessened out of proportion to the motor force, and provided it were kept persistently in the contracted condition. Within suitable limits, by lessening bore, rate is quickened and volume lessened. And so long as the proper balance is preserved between the quickening effect of lessened calibre of bronchial tube and the amount of propelling power from behind in expiration we may assume that as much may be gained by increase of speed as is lost by diminution of channel. If the objection were valid, it would be equally strong against the case of the glottis, or that of the artery. Contraction of the glottis must impede both the ingoing and the outgoing of the air, and does so in various morbid conditions. Yet, in the normal state of things, the glottis does expand for inspiration and contract for expiration.

The same person using the spirometer finds that he cannot do full justice to his vital capacity, if he make his trial expiration too quickly, or too slowly. He is stopped by positive inability to do more of the act of expiration, and not by the sensation of apnœa. When too quick, he finishes before he has got out all the expiratory air from the lungs, which he could by a quieter attempt expel. When too slow, he tires the expiratory machinery before he has emptied the lungs of all but the necessary residual air. I suspect that the bronchial muscles are a good deal concerned in occasioning the inadequate performance of these spirometric expirations. The latter portion of the expiration consists in an evident squeezing out of the air from the bronchial tubes. If expiration have been commenced gently and carried on smoothly and not too slowly, the air is first

expelled evenly from the air-cells, then pushed on by the contracting tubes until their muscles are tired. If the tubes be contracted too quickly before the removable air is all out of the air-cells, the bronchial muscles have done their work too soon. If the expiratory effort be made too slowly, the bronchial muscles also become tired before they have completed the full expulsion of air. This hypothesis, at least, seems to fit the facts so familiar to every one who makes habitual use of the spirometer in his practice.

I assume the following propositions.

1. The bronchial muscles are expiratory muscles. They contract rhythmically in quiet normal expiration, and by so doing quicken expulsion of foul air from the air-cells, and accommodate the size of the tubes to the lessening bulk of the lung. In forcible expiration, the thorax governs the lungs during the major portion of the act; but at the terminal point of squeezing out the last portions of expirable air, the contraction of the bronchial muscles is the chief agent, and the lungs govern the thorax in accommodating its size to theirs.

2. The bronchial muscles are never inspiratory muscles. They oppose undue force of inspiration when it comes to bear upon the lesser tubes, and so become regulators of the amount of air admitted.

3. The bronchial muscles under abnormal circumstances can act during either inspiration or expiration. They act with irregular vehemence in cough; with clonic spasm in hooping cough; with tonic spasm in asthma.

There is another point of physiological interest, in which in all probability the bronchial muscles play the principal part. It is a very common fallacy, that the oxygenation of the blood is governed almost entirely by the amount of oxygen present in the surrounding atmosphere. In reality it is governed exclusively by the quantity of oxygen which gains admission into the blood through the walls of the air-cells; and this depends upon several other things besides the amount of oxygen in the atmosphere. That of course is one element; but the state of the lungs, and the need of oxygen in the system, are far more influential elements. There is less oxygen in a cubic foot of air on a mountain-top than in a low bottom; and yet, in consequence of the energising effect of mountain-air, a healthy person will generally use up more. There is less oxygen on a soft day, with the barometer low and the wind in the west, than on a sharp dry day with the barometer high and the wind in the east. Yet a person with sensitive lungs will use up more on the warm day, because he will take in more. He will fill his chest better, and can tell by his own sensations that he does so. He feels that the air goes deeper; that, to use a familiar phrase, "it gets

into his lungs." On the east-wind day, he feels a sense of constriction; the air does not get into every nook and crevice, because, metaphorically speaking, his lungs do not like the air and refuse to have it. Hence, although there is more oxygen for healthy lungs in a cold bracing place, and in winter, there is really more for diseased and sensitive lungs in a mild climate, and in summer; simply because in the one case the lungs cannot use it to the full extent, although it is there for them; and in the other, they can use it amply, and it is there to an adequate if not quite to the same extent.

Most irritating gases irritate the glottis, and so are shut out on the threshold; but when this is not the case they induce a sense of pulmonic constriction, which in this case, as in that of the east wind, may be largely due to reflex action of the bronchial muscles—the natural protectors of the air-cells.—*British Med. Journal, Dec.* 14, 1861, *p.* 633.

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## 32.—ON A SIMPLE AND EFFICIENT METHOD OF PERFORMING ARTIFICIAL RESPIRATION.

By Dr. William Marcet, F.R.S., Assistant-Physician to the Westminster Hospital.

[Several years ago Dr. Marcet published an account of an instrument for performing artificial inspiration, which was, however, subject to several very important objections. The one now described is liable to none of these.]

Dr. Marcet's new instrument acts on the same principle as that invented by Dr. Sibson. It has the form of a bellows. He has adopted for its shape that of a cylinder, although any other would be equally eligible—as, for example, that of a common fire-bellows. It must be capable of containing thirty or forty cubic inches of air. On the inferior plate of the bellows, in addition to the leather valve of a common fire-bellows, is a round aperture, exactly closed by a little brass cone. This cone forms part of a brass rod, which projects to a given extent in and out of the bellows. The cone is forced into the aperture and kept *in sitû* by means of a small coil spring, which is disposed in such a way that when the operator presses on the end of the rod which is inside the bellows, the aperture is opened. On releasing the pressure, the little cone returns to its former position, and closes the hole. The method of using this instrument requires but little explanation. After the air has been driven out of the bellows into the lungs, a slight pressure on the upper plate is required to depress the conical valve, and establish thereby through the instrument a communication between the lungs and the external air, when, of course, the

thorax will contract by its own elasticity and the expiration take place. On expanding the bellows, it is filled with fresh air to be used for the next inspiration. The present instrument differs therefore from that of Dr. Sibson, inasmuch as instead of a syringe and tap, or valve which is opened with the fingers after each successive inflation of the lungs, the author has adapted a bellows and the conical valve described above, which is opened by the very motion required to blow out the air contained in the bellows, and shuts of its own accord on discontinuing the pressure.

The instrument has the advantage of great simplicity in its construction. It is of a cheap description, which will place it within reach of every medical and surgical practitioner; it is very light and portable, and may be carried about in a coat pocket; its application requires no practice or experience, as anybody can use a fire-bellows; only a little attention will be wanted to allow the expiration by pressing on the upper surface or plate of the bellows after each inspiration.

Having found a good method for inflating the lungs, Dr. Marcet endeavoured to discover a means of connecting this instrument with the larynx or trachea by some process calculated to ensure the passage of air from the bellows into the lungs, without any being lost by its escaping upwards. The necessity of overcoming this difficulty appeared to him as accounting for the slight degree of favour which instruments for artificial respiration have hitherto received. Indeed, he observed, what is the use, except as a means of experiment, of an instrument constructed so as to imitate exactly normal respiration when tied to the trachea of a dead body, if there be no means of ensuring the passage of air from this instrument into the living human lungs? Anybody who had performed artificial respiration by instrumental process would testify to the truth of this objection. On some occasions, when attempting to restore animation in animals, he had himself been unsuccessful from the canula not being properly fixed in the trachea, or from its becoming accidentally loosened just as the first signs of returning animation appeared.

In order to solve this difficulty, it was necessary to devise a canula so constructed that when introduced through the mouth into the larynx, it pressed on its sides with a sufficient degree of force to prevent air under pressure from finding its way between the instrument and the mucous membrane of the windpipe. The following contrivance answered perfectly this condition, and was executed under the author's directions by Messrs Whicker and Blaise, of St. James's-street:—

A tube or canula of German silver, plated, about thirteen inches in length, and five-sixteenths of an inch in diameter,

is bent into a shape not unlike that of a catheter. This tube is grooved transversely at its bent extremity, and a piece of sheet caoutchouc is very tightly fastened round the margins of this groove by means of a fine silver wire. A second tube, of a very small diameter, likewise of German silver, and nearly of the same length as the other, is soldered to it, on its concave side, and opens into the minute chamber existing between the sheet caoutchouc and the metal. At its free extremity the small tube turns off from the main pipe or canula, and its orifice is ground so as to admit the nozzle of a small india-rubber bottle, similar to those used as syringes; the small tube is, moreover, supplied near its free end with a stop-cock. The main pipe has also a stop-cock near its straight end, which is constructed in such a way as to establish at will a communication between the lungs and the bellows, or between the lungs and the open air, so that as soon as natural respiration appears to be returning air may be admitted into the lungs without disconnecting the apparatus. It is advisable to have in readiness two or three canulæ of different sizes.

The extremity of this canula is to be introduced into the larynx, and the sheet caoutchouc at once expanded by applying the india-rubber bottle to the end of the narrow tube, and compressing it with the hand. By closing the stop-cock, the sheet caoutchouc remains permanently dilated, forming a round ball, which fills up perfectly the diameter of that part of the windpipe into which it has been introduced, acting as a soft cushion, which prevents the contact of the hard metal end of the canula with the delicate lining of the larynx; at the same time, the communication between the lungs and the external air remains open through the canula. This instrument is so effectually secured in the larynx as to admit of a certain amount of traction without being displaced, which is an important element for the successful performance of artificial respiration by the method in question.

In a case of suspended animation where artificial respiration alone was capable of saving life, the first thing to be done would be to adopt some ready method until the canula and bellows the author had described could be applied. It was advisable to begin with the Ready Method in order to lose no time, and keep up the spark of life until it might be kindled by appropriate means. The canula should be introduced into the larynx as rapidly as possible. The author said he could not presume to give advice as to the best method of inserting a tube into the larynx through the mouth and glottis during life, but when experimenting on the dead body he had acted as follows:—The shoulders and neck were slightly raised, the head being allowed to fall backwards; next, the larynx was pushed

backwards against the spine, the tongue drawn forwards, and the canula introduced into the mouth with its concave side downwards; the end of the instrument was pushed forwards in the median line of the tongue, being kept in contact with this organ, when it found its way through the glottis into the larynx. On inflating the sheet caoutchouc now within the larynx, the canula would be found to resist a slight effort made to withdraw it; should it, on the contrary, give way, this would show that the end of the canula was in the œsophagus, and not in the larynx.

The author believed that this method, which he had practised also on living dogs, might be available for introducing the tube into the human larynx during life; probably, however, the *modus operandi* recommended by Dr. Sibson to introduce a tube into larynx might be preferable. This gentleman, instead of carrying the point of the instrument along the upper surface of the tongue, pushed it backwards, keeping it in contact with the posterior wall of the pharynx; by this means the epiglottis was avoided, which must by the other method interfere with the free entrance of a tube into the windpipe.

The laryngeal tube is fixed in the windpipe by expanding the sheet caoutchouc with the elastic india-rubber bag, and closing the stop-cock on the narrow pipe. The bellows should be at once connected with the canula by means of a piece of caoutchouc tube, about eighteen inches long. Artificial respiration is now commenced by distending the bellows more or less, according to the amount of air required, and then compressing it, when the air it contains is introduced into the lungs. As soon as an obstacle is felt to the further compression of the bellows, the inspiration is at an end, and, by making a slight effort to overcome this obstacle, the lungs will be allowed to empty themselves, much in the same way as they would during natural inspiration. The expiration may be assisted by external pressure on the chest. This operation can be continued for any length of time.

In order to test the efficiency of the present method of performing artificial respiration, Dr. Marcet gave an overdose of chloroform to a dog, and when respiration had quite ceased, he succeeded perfectly in restoring animation with the instrument described above; indeed, animation was suspended twice in the course of a few minutes, and restored twice without the slightest difficulty. The subject of this experiment was none the worse for the operation.

Finally, the author remarked, that the laryngeal tube is equally applicable whatever be the instrument used for inflating the lungs; and moreover, that it will prove of great utility for all experimental inquiries connected with suspended animation.

where artificial respiration is resorted to. It will save putting animals to a great deal of pain by doing away with the necessity of performing tracheotomy*.—*Lancet, Feb.* 22, 1862, *p.* 201.

## 33.—ON HÆMOPTYSIS.

### By Dr. C. J. B. Williams, F.R.S., &c.

[It is a singular fact that where tubercular disease is situated near the root of the lung (the dulness existing in the interscapular space) the hemorrhage is generally considerable. Hemorrhage occurs much more frequently in the early stages of consumption than when the disease is further advanced.]

The influence of styptics avails to staunch the blood, and should be means calculated to moderate the circulation. After much observation, I favour the employment of the simple and known styptics, frequently exhibited, in large doses. I think well especially of the use of gallic acid in full doses. I know there is a doubt in the minds of some as to the efficacy of gallic acid as a styptic; but I must say that I have none. I give it in doses of ten grains, and its efficacy is increased by combining it with a derivative. I combine it frequently with cream of tartar, which my namesake, Dr. Robert Williams, has shown to be itself possessed of hæmostatic properties. Sometimes it is useful to combine it with opium or digitalis. If there be much excitement, then a useful adjuvant is found in tartarized antimony. Gallic acid failing, I believe that great service may be derived from the use of the acetate of lead, but not in small doses. I never trust to less than three grains to a dose each hour or half-hour, with a little laudanum and acetic acid. There is no harm or risk of lead-poisoning if once a day the alimentary canal be swept clear with the sulphate of magnesia. This prevents the colic. In this way the styptic effect of lead is produced better than by administering the smaller doses, and at the same time any ill effects may be thus prevented. If called to a case of hemoptysis, I would not put ice on the chest. I am obliged to speak thus curtly, because our time presses. No doubt placing ice on the chest will control the bleeding, but it does this at a great cost. It substitutes for the hemorrhagic condition a worse evil. The violence of the reaction which follows is very injurious. Some of the worst cases of galloping consumption—that is, of phthisis accompanied with rapid inflammatory change—which I have ever seen, have been cases in which the most rapid symptoms of destruction have followed the arrest of hemorrhage by the local application of ice to the chest.—*Lancet, April* 19, 1862, *p.* 399.

* The price of the bellows and canula is about £2.

## DISEASES OF THE ORGANS OF DIGESTION.

### 34.—ON APHTHOUS INFLAMMATION, AND ON ULCER OF THE TONGUE.

By Thos. Bryant, Esq., Assistant Surgeon to Guy's Hospital.

*Aphthous inflammation of the tongue.*—The ordinary aphthous inflammation of the tongue is by no means uncommon; it may be found in children or in adults, and appears to be caused by any irritation in the alimentary canal; it is easily subdued by means of the chlorate of potash, given internally in five-grain doses, and a lotion of the same salt, of about one to two drachms to the pint of water.

*Simple ulcer.*—Occasionally the tongue is the seat of a simple ulcer, and this is perhaps the form which is described by authors as the dyspeptic ulcer; it is certainly, as a rule, associated with some disturbance of the digestive apparatus, and, as a consequence, may be correctly designated by such a term. I have the notes of an obstinate case which came before me last year, which is worth quoting.

*Case.*—It was in a delicate-looking, but otherwise healthy, banker's clerk, æt. 20, who had been the subject of a superficial ulceration of the tongue for *thirteen months*. He had never had syphilis, and his living had been good and steady. He had sought all kinds of advice, had taken mercury, and the ulcers had been irritated by the nitrate of silver and other applications, but all without benefit. When I saw him the tongue was extensively ulcerated over the anterior portion and its under side; it was superficial and indolent in its character. I gave him the chlorate of potash as a medicine and as a lotion, and ordered him to live on the simplest diet; under this simple treatment he recovered perfectly in three weeks.

About six months subsequently he had a slight return, but it was subdued as rapidly by the same treatment.

*Remarks.*—This case is given to show how a simple disease may be mistaken for a more serious one; and how, by such an error, the patient may be kept in misery and subjected to every form of treatment that can be applied. Having recognised the fact of its simple nature, simple treatment will suffice, and the time usually required for its cure is not great.—*Guy's Hospital Reports. Vol.* vii. *p.* 12.

### 35.—ON TUMOURS AND DEEP-SEATED ULCERATION OF THE TONGUE.

By Thos. Bryant, Esq., Assistant Surgeon to Guy's Hospital.

[It is necessary to class tumours and ulcerations of the tongue

together, inasmuch as the ulcerations are the later stages of the tumours. The tumours and deep-seated ulcers of the tongue are all either syphilitic or cancerous.]

That *syphilitic tumours* are formed in the tongue, as they may be in other parts, is a point which can hardly now admit of a doubt. They appear to be composed of little else than ill-organised inflammatory products, this material having been effused into or between the muscles of the part. Sometimes the tumour thus formed will be of a diffused character, at others it be will be more localized and will give the surgeon the idea of a distinct growth; both forms, however, have the same pathology, and both may be completely removed by appropriate treatment.

Like the inflammatory syphilitic exudations in other parts, and more particularly like those which are so frequent in the cellular tissue, degeneration is a common termination; an abscess, as a result, takes place, leaving an excavated and ragged ulcer.

A *cancerous tumour* may pass through all the same stages; a local or infiltrating tumour may first appear, and grow to any size with variable degrees of rapidity; at some uncertain period its degeneration will certainly ensue, and softening, with the formation of an abscess, will be the result. Having discharged its contents, an ulcer will be left, which is generally described as being cancerous; its deeply excavated and irregular surface, indurated, ragged, and everted edges, are points which, to the practised eye, at once suggest its true nature.

It is hardly necessary to dwell on the importance of making a correct diagnosis in these two forms of disease, for the syphilitic is amenable to medical treatment, whilst the cancerous can only be relieved by some surgical means.

I have notes of several interesting examples of syphilitic tumours, the following abstract of which may be read with interest.

*Case.*—A married woman, æt. 37, applied to me in September, 1857, with a large, ill-defined tumour developed in the extensor muscles of the right thigh; it had been growing six months, but somewhat slowly. It caused little or no pain. She had had an ulcerated tongue some months previously, but from this she had recovered. Her husband had also been under my care with a specific eruption, which had been cured by iodine.

The iodide of potassium and iron were given to the patient, and in six weeks the tumour had entirely disappeared.

*Case.*—A married woman, æt. 36, applied to me for advice with a large tumour developed in the muscles of the left scapula, beneath the spine; it was diffused, and completely occupied the whole of the surface of the bone. It was firm to the touch, and at times painful; it had been growing about nine months. No

history of syphilis could at first be obtained, but it appeared that one year previously she had suckled a neighbour's child, and had suffered from sore nipples of an obstinate character, an eruption of the skin, which was cured by treatment, having also subsequently appeared.

Under the bichloride of mercury and tonics the whole of this tumour disappeared in three months, and convalescence was established.

The cases of cancer of the tongue are more numerous. I have 18 examples, 13 in males and 5 in females. In the majority of instances the disease had existed but a few months :

| | | | |
|---|---|---|---|
| 1 | patient was | 24 | years of age. |
| 3 | were between | 30 | and 40 |
| 4 | ,, | 40 | 50 |
| 6 | ,, | 50 | 60 |
| 3 | ,, | 60 | 70 |
| 1 | aged 77. | | |

*Treatment.*—In the largest proportion of cases nothing but palliative treatment could be applied; the disease was too extensive and diffused to allow of any surgical operation, and consequently relief was given by means of lotions to the part to keep the wound clean. The biborate of soda and the sodæ chlorinatæ are the best forms, combined or not with some preparation of opium. Tonics should be administered to improve the health, and good living advocated. In four cases the operation of excision was performed, and in two of these a subsequent return rapidly took place. In these examples the disease was quite local, existing only as a distinct tubercle, and excision was carried out with difficulty; in one case some copious hemorrhage followed, which was, however, speedily arrested by the actual cautery. In two or three other examples of the disease, relief was for a time obtained by the application of a caustics or the hot iron; but such remedies are, as a rule, by no means satisfactory; they may do good, but it is for a very short period, and they should be employed only when the local disease is very painful; in these cases the destruction of a portion of the growth by such means appears to be beneficial.—*Guy's Hospital Reports, Vol.* vii., *p.* 15.

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## 36.—ON DIPHTHERIA.

By Dr. Edward Latham Ormerod, Physician to the Sussex County Hospital.

Diphtheria may display itself in the throat in three different forms, each of which requires a special consideration. First, there is the typical form, from which the disease takes its

name, characterized by exudation on the surface; or secondly, the soft palate and adjacent parts may be inflamed and ulcerated, with or without exudation; or thirdly, and more rarely, we may have inflammation ending in suppuration of the deeper tissues of the soft palate.

1. The first or typical form of diphtheria is characterized by the appearance of membranous patches of a pearly whiteness on the soft palate. These occur sometimes as minute spots, which coalesce as they spread, but more commonly begin as broad, white, milky films, which look just as if a blister had been raised on the soft palate, or the surface had been touched with caustic. They chiefly affect the velum palati, running down to the tonsils, but are also found on the uvula. Altogether the local changes in this form are so slight on their first appearance, so different in this respect from those which characterize the form of the disease next to be described, that it is difficult to realize in the first instance the terrible importance of these delicate white films.

After a little while, generally two or three days, this appearance changes; the exudation becomes opaque, and is stained yellow or black, and as it grows thicker and stiffer, it parts at the edges from the subjacent mucous membrane. If it is pulled off at this period, the surface is seen raw and bleeding beneath, but there is no loss of substance.

I have seen cases where a firm leathery coat of this description invested the soft palate so completely as to seem like a membrane stretched across the aperture, and almost entirely obstructed the passage. Under such circumstances the partial removal of this membrane is required, and life may be prolonged by this means. Dr. Hall tells me that in one case he nipped off the entire uvula with the most decided temporary relief to the sufferings of a child, who before could scarcely breathe or swallow, so great was the mechanical obstruction. But, as a rule, nothing is gained by detaching this deposit, for it will speedily be reproduced, and the operation causes much distress, if not actual pain, to the patient; and in estimating the probable benefit from such interference, we must remember that, besides the exudation which we see, and can reach, there is probably much that we can neither see nor reach, and must perforce leave alone: though, on the whole, I believe that this typical exudation is more marked on the parts of the soft palate which are in sight than anywhere else, the plastic exudations on the interior of the larynx and bronchi only excepted.

In fatal cases this exudation becomes thicker, larger, and darker, stained by blood and food, and perhaps by local applications, and dried by the current of the breath, which cannot

pass now through the obstructed nostrils. The upper edge becomes ragged, and is confused with the similar deposits which appear in the roof of the mouth; while below, the swollen uvula and tonsils are often with difficulty recognisable. At this period the exact distinctions between this and the ulcerative form of disease are to a great extent effaced. In favourable cases of this nature, the patches become less and less as the swelling of the parts subsides, and seem gradually to be worn or crumbled off rather than to melt away.

2. The form of diphtheria just described is not to my experience so common as the ulcerative or sloughing form, where there is actual loss of substance of the parts involved; where there may or may not be exudation; where almost the only circumstance distinguishing it from the scarlatinal sore-throat is the implication of the uvula in the general swelling; and where, from the first, the local disease assumes a formidable appearance.

It is unnecessary to describe here at length the familiar characters of a sore-throat of this kind: the grey sloughy spots, where the folds of the soft palate lie in contact, which gradually extend into broad patches along the fissures between the uvula and tonsils; the enormous watery swelling which shuts out all but the front of the velum palati from our view; and the horrible mass of slough and exudation, which in three or four days almost fills up the back of the mouth. All this is unhappily a matter of familiar observation, and much of this may be seen in the form of diphtheria already described; much, too, in the most malignant forms of scarlatina.

Though I believe that little advantage is gained by the frequent repetition of any local application to this diseased mass, yet it is of consequence that the throat he examined at least once a day, if this can be done without distressing or irritating the patient. For, besides the information as to the progress of the throat disease which is to be gained from this inspection, we may learn much as to the state of the system generally from the appearance of the mucous membrane of the soft palate in the neghbourhood of the sloughs or ulcers. When the mucous membrane looks pale and ashy, and displays no signs of any active effort at repair, even though there be no extension of the local disease, we must augur ill of the result. Any indications of power, on the contrary, such as the separation of the sloughs or deposits, a bright-red colour of the mucous membrane, even sometimes a little bleeding from an ulcerated surface, justify a more favourable opinion.

Are sore-throats of this kind properly to be classed as diphtheria? I cannot myself doubt it. There is not a single circumstance in the pathology of these cases from beginning to

end, except the different appearance of the throat at an early stage, which seems to me to justify a contrary opinion. I have not found them more closely connected with scarlatina than the typical form of diphtheria seems to be, and the whole history of the two forms runs paralled both as to the primary disease and the remote consequences; and if I could doubt, the occasional appearance of a regular diphtheritic exudation in this form of disease might seem to settle the question that the two forms are identical. It is in this form that the disease has chiefly shown itself here, and it is in this form that the severer disease seems to shade off into the slighter cases already alluded to.

3. The third form in which diphtheria displays itself in the throat, which I have met with but rarely, and only in adults, differs little from common quinsy. The most striking distinctions are the greater tendency to affect both sides of the throat simultaneously, and the greater amount of ulceration which precedes and follows the discharge of the matter from the tonsils; perhaps, also, there is less pain and more prostration than in common quinsy. Dissimilar as this form of throat affection is from typical diphtheria, yet, as in the form just described, and on the same grounds, I believe that the disease is essentially the same in both. Singularly enough, the throat affection was of this form in some of the cases where the secondary effects of diphtheria were most characteristically displayed. In one case, indeed, which was under observation in the hospital throughout its whole course, the man was supposed for some days, judging merely from the appearance of the throat, to have common quinsy; yet he had subsequent paraplegia and paralysis of the soft palate, just as after typical diphtheria.

I have met with this form of the disease rarely, and only in adults. It may be owing to this circumstance that the results in this have been so much more favourable than in the other two forms.

Lest from the large space which has been allotted to the description of the distinctions between these forms I should seem to attach undue importance to them, I must recapitulate a little. The types of these classes are not permanent and invariable throughout the whole course of the disease; on the contrary, the case which belongs to one class at one time may assume the a throat has been affected with ulceration or sloughing, we characters of another class at a later period. Thus, where may, at a later period, find a genuine diphtheritic patch, or destruction of tissue may proceed beneath the diphtheritic crust. So that we cannot assert that there is any specific difference between these forms; and objectionable, on some

accounts, as the term diphtheria may seem, yet we must own that a connecting link between all the three forms is found in the tendency to this kind of exudation which exists in them all alike. We must own, too, that the term malignant or putrid sore-throat, is not quite as comprehensive of the whole disease as might be thought from a limited experience: instance the occasional occurrence of nasal diphtheria.—*Lancet, December* 7, 1861, *p.* 543.

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## 37.—ON THE TREATMENT OF DIPHTHERIA.

By Dr. John West Walker, Spilsby.

[These are the three following salient characteristics of a case of diphtheria: 1. A more or less acute unhealthy form of inflammation affecting the faucial region. 2. The presence of the peculiar leathery exudation. 3. The marked tendency to death by exhaustion.]

For each of these several characteristics, our materia medica possesses a remedy of almost specific virtue.

I have long looked upon guaiacum as a specific in common sore throat; for, no matter in what place, what the age, sex, or condition of the patient, or what the stage of the complaint, I have always administered it, and had reason to be satisfied with the result; indeed, I consider the effect of this remedy in such cases to furnish an example of cure as distinguished from treatment. (*vide* Dr. Latham's Lectures.) Frequently have I seen cases of cynanche and diphtheria existing at the same time and and in the same family; and I was first induced to give guaiacum in the more severe affection by observing its good effect in cases which, at the onset, were supposed to be examples of common sore throat. I now unhesitatingly consider guaiacum as the remedy *par excellence* for diphtheria. The presence of the peculiar exudation almost instinctively suggests the employment of the chlorate of potash. For the debility, &c., our sheet-anchors are ammonia and bark.

My prescription for all cases of diphtheria is the following:—

℞. Potassæ chloratis ℈iv; tincturæ cinchonæ comp. ℥ss; tincturæ guaiaci comp. ℥ss ad ℥vj; mellis q. s.; aquæ ad ℥viij. M.

Of this mixture from one tea to two tablespoonfuls may be given, according to age; but the interval between each dose, from one to four hours or three times a day, must be regulated according to the severity of the case.

These, then, I consider the therapeutic essentials in the treatment of diphtheria; but, in a complaint so terrible, it behoves

us to resort to every possible adjuvant, however slightly it may contribute to the general good; and under this heading I am disposed to place all topical applications. My plan is to apply (by no means frequently) a concentrated solution of nitrate of silver, believing it to hasten the removal of the exudation, and to induce a more healthy action over the denuded surface. Of gargles, I consider weak vinegar and water, or what is more elegant, dilute acetic acid with infusion of roses, to be as good as any, producing slightly stimulant and astringent effects on the parts, and washing away offensive detached particles. Externally, warmth applied after the manner of poultices, of which a bag of chamomile-flowers is as convenient as any, together with mild terebinthinate embrocations applied two or three times a day, are to be recommended. Like most of my fellow-practitioners, I avoid mercurials; and should the bowels require moving, castor-oil or the milder laxatives suffice.

The *diet* should be nutritious, with an increasing allowance of wine from the first. Lastly, we should ever be on the alert to remove as far as practicable the primary cause of the complaint by attention to every sanitary particular.

In advocating the guaiacum treatment of diphtheria, I must disclaim all credit for originality. Others have recommended it to the notice of the profession; and more, I doubt not, are daily in the habit of carrying it out in practice. What I desire is, that many of my fellow-practitioners may be induced to try a remedy which, from what I have lately read on the subject, is not so extensively employed as it deserves to be.—*British Med. Journal, Dec.* 21, 1861, *p.* 655.

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## 38.—SULPHURIC ACID MIXTURE IN DIARRHŒA.

By Dr. Andrew Clark, London Hospital.

There is at least one advantage in dealing with large numbers of out-patients at a public hospital. You can classify cases of particular diseases into sets, study the comparative values of different remedies, and acquire possession of broad therapeutic facts. It is objected that therapeutical experiments upon out-patients are worthless on account of the unfavourable hygienic conditions under which they are placed. But this, it seems to me, is the very reason that they are eminently *worth-full*. When you experiment upon in-patients, it is often doubtful whether the cures you get are due to the improved hygienic conditions of the patient, to nature, or to your particular remedy. But the cures you get among out-patients, in spite of unfavourable hygienic conditions, and in the very circumstances under which the diseases are contracted, may more justly be considered criteria of the values of your plans of treatment.

I have lately had the opportunity of renewing our therapeutical experiments upon diarrhœa; and with the same results as before. Sulphuric acid has been tried in contrast with chalk, opium, nitrate of silver, copper, bismuth, lead, pernitrate of iron, and others, singly and in combination; and it has come out of the trial demonstrably as a more rapidly efficient agent than any of them in the cure of diarrhœa; but it is much less effective alone than in combination. Given in the manner prescribed below, it has succeeded in curing 74 per cent. of cases of diarrhœa within forty-eight hours.

When the stools are scanty and frequent the administration of the acid is preceded by a dose of castor-oil. When they are abundant and watery the acid is begun at once:—

℞. Acid sulph. aromat. ℥xx.; tinct. camph. comp., ℥j.; ætheris chlorici, ℥x.; spirit. menthæ pip. ℥ss.; syrupi rhœados, ℥j.; decoct. hæmatox. ad ℥j.*

To be given every four, five, or six hours, according to the urgency of the diarrhœa. The object of the aromatics in the formula is the correction of the fæcal fermentation which is one of the chief conditions in the production of diarrhœa. In some cases the second or third dose succeeds in checking the disease, and then the patient is troubled for a day or two with pinching pains in various parts of the bowels. These are best relieved by a small dose of castor oil with an aromatic. The acid is rarely successful in advanced phthisical or dysenteric diarrhœa, but it it so in the early stages of these complaints.—*Med. Times and Gazette, Jan.* 4, 1862, *p.* 10.

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## 39.—ON COLORATION OF THE FÆCES.

By Dr. Thomas Inman, Liverpool.

We do not advance truth by opposing flippancies to facts or sneers to scientific inquiry; we do advance it by a patient investigation and collation of observations. False theories have been, and still are, the bane of medicine; and no one hugs them more closely than those styled "practical" men. Your correspondent is no exception to this; for he attributes to two false theories all the force of absolute facts.

The subject to which I have again called attention cannot, however, be so easily disposed of as Mr. Pope would imply; and I shall be glad if you will allow me to point out some of the difficulties which surround it. I will enumerate them as propositions which I believe to be certain.

1. In health, and generally in disease, the brown colour of the fæces begins *after* they have entered the colon, and the nearer they are to the duodenum the lighter is the colour. If the

* Or, if the mixture is to be kept, some aromatic water.

colour were due to the bile alone, and this fluid being only partially excrementitious, the reverse would be the case; *i.e.*, they would be brown in the duodenum and light in the rectum. 2. The bile is yellow during life; the motions are brown, becoming darker by exposure. 3. In obstruction of the biliary ducts, the intestinal secretions remain of the same colour throughout the bowels. 4. In cirrhosis, on the contrary, when the bile is thin and watery, we frequently see the stools of the normal colour. 5. In cases of poisoning by calomel, there is no change noted in the contents of the gall-bladder, or of the small intestines; and autopsies show that mercury does not make the bile brown, but the colon is occasionally inflamed. (*Taylor on Poisons*, p. 417.) 6. In dysentery—a disease affecting principally the colon—we usually miss the ordinary feculent stools; nor are they temporarily restored by mercurials; they do not reappear until a very large portion of the colonic mucous membrane is healthy. This observation is true, even when the liver is demonstrated to be in good order. (*Morehead*, p. 251, 296.) 7. When infants have diarrhœa, the stools are frequently watery and green; after taking too much mercury they are sticky and green, there being *no* corresponding change noted in the *bile or liver*. (Pereira, *Materia Medica*, p. 852; West on *Diseases of Children*, p. 390, 392-3; Petrie as quoted by myself; *Foundation*, &c., p. 251.) 8. The fæces of the fœtus *in utero* are black; of the infant fed on milk, yellow; of the adult fed on milk or veal, white; of the infant fed as usual, brown. The young pig, puppy, foal, and calf, pass stools of different colour, as do their adult parents, and they are unaffected by calomel. (Pereira, vol. i. p. 851). *Yet in all, the bile is essentially similar.* (Kirkes's *Physiology*, 2nd edit., p. 241.) 9. In man the colour of the motions depends very much upon the ingesta, and independent of these, upon climate. Port wine, *e.g.*, makes them darker than natural; and a tropical climate does the same. 10. Lawson and Frerichs have demonstrated that the brown colour is not due to bile alone, or any modification of it, but is due to a special secretion (in the colon?). 11. In a total absence of bile there is no brown colour at all.

Putting these considerations together, we deduce:—

*a*. That the peculiar colour of the stools in each animal does not depend upon a variety of colour in the bile. *b*. That the colour is due to some change which ensues in the colon. *c*. That the colour varies with the food, the bile remaining the same. *d*. That no change occurs in the colon in the total absence of bile.

The question, then, is narrowed to this: Why is calomel supposed to restore a rich brown colour to the stools, by purging, by acting on the liver, or otherwise?

The answers are curious :—

1. It does not do so when used alone. (see Pereira, pp 851-3; Taylor, pp. 416-17.) 2. It does do so when combined with colocynth, jalap, senna, decoction of aloes, or other black draught. 3. A patient of mine tells me that every physician he has consulted declared that he had congestion of the liver; for he is subject to whitish stools. Each had prescribed mercurials; but, he adds, *these invariably make the motions a lighter colour.* 4. Diarrhœa, with clay coloured evacuations, without jaundice, is not uncommon; and experience tells us that the colour returns to the stools again in four days without any medicine whatever having been taken.

The only positive conclusion, then, that we can draw is, that *occasionally* calomel *seems* to bring about a change in the colour of the fæces in the colon; and the evidence that it does this by influencing *the liver*, is not a bit stronger than that it does so by acting on the colon.

But we must not rest here; we must point out again the difference between a theory and a fact. Mr. Pope assumes that white stools are an indication of congestion of the liver. Let us enumerate a few truths bearing on this point.

1. There is generally congestion of the liver in every case of cardiac dropsy; but in such cases the stools are perfectly healthy. The same remark applies to old asthma and bronchitis. 2. Assuming that there is some similarity between congestion and inflammation, let us turn to Morehead's work on *Indian Diseases*, the latest and best authority we have. We read thus, "In acute hepatitis, the alvine discharges are not peculiar." (p. 373.) "In portal congestion the stools may be dark or pale." (p. 387.) "In hepatic abscess, the fæces are unchanged prior to the abscess bursting." (p. 378.) With this evidence, what can we say of the *theory* which assumes that white stools are proofs of hepatic derangement; and that a restoration of their colour is a proof of the action of mercury on the liver?

In conclusion, let me suggest to your correspondent that an invocation to the Deity is a dangerous weapon to use against an opponent, when Morehead writes: "The opinion at one time generally entertained that mercury exercises some special power in hepatic inflammation is unsupported by clinical experience." (p. 389); and again, "There is no organ so prone, in India, as the liver to become the seat of suppuration, and the constitutional states which favour this result of inflammation, and *frequently cause it*, are certainly *aggravated by mercury.*" (p. 390.) Might I not fairly retort by saying "God help the patient with congested liver whose doctor has mercury for his panacea, and who sees in every white stool an earnest demand for a calomel drench." I forbear to remark further on your correspondent's

note than to add, that if writers would think more deeply, and reason more closely than they do on the facts before them, we should have more tolerance and less difference of opinion than at present characterise the members of our profession.—*British Med. Journal, Nov.* 2, 1861, *p.* 478.

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## 40.—ON THE CAUSE AND CURE OF TAPE-WORM.

By Dr. Fleming, Birmingham.

In his clinique at the Queen's Hospital, Dr. Fleming has frequently made the cause and cure of tape-worm the subject of clinical remark. This affection prevails to a wide extent in Birmingham, and is often seen in its more severe forms among the out-patients. As compared with Edinburgh, Dr. Fleming observes, that the greater frequency and severity of the disease are very marked. The patients may often be recognized on entering the consultation-room by their worn, vacant aspect,—their trembling gait and hands, staring eyes, and hesitating manner. Many suffer for years, with alternate periods of aggravation and improvement. Of the relation of cause and effect between the measle of the pig, or *cysticercus cellulosæ*, and tape-worm, this town affords ample evidence. Dr. Fleming has ascertained that large quantities of measly pork are sold and used as food in Birmingham. It is not exposed for sale in the public markets, but is disposed of privately, and, doubtless, much of it is employed in the manufacture of sausages. These are made use of to a large extent by the working classes, and are frequently eaten imperfectly cooked or nearly raw. Dr. Fleming and Mr. Lloyd have found portions of the "measle" in the sausages with the microscope. Although the worm must be for the most part destroyed in the mincing, it may sometimes escape sufficiently intact to renew its life in the bowels of an unhappy artisan.

Dr. Fleming has made comparative trials of several vermicides on the tape-worm; amongst others of male fern, kamala, koosso, and spigelia. All are useful, but Dr. Fleming finds the first to be the most efficient and the safest. He gives it thus:—℞. Ol. filicis, ℥j; mist. acaciæ, ℥ss; M. ft. haust. To be mixed with an ounce and a-half of sweet milk and taken at bed-time. The patient must omit the dinner and evening meal of that day. Taken thus, on an empty stomach, the mixture is carried speedily into the intestines, to feed, and, at the same time, poison the hungry parasite which nestles there. Milk is the favourite food of the worm. A large experience leaves no doubt of the great efficiency of this medication. In 1857 Dr. Fleming obtained a supply of the kamala from Dr. Anderson,

of the H.E.I.C.S., and was one of the first to use that drug in this country. As a worm-killer, it is often very efficacious, but less so than the male fern; while its action on the bowels and secondary depression of the system are often unduly severe.—*Med. Times and Gazette, Nov.* 16, 1862, *p.* 512.

## DISEASES OF THE URINARY ORGANS.

### 41.—ON HÆMATURIA.

By Dr. Hyde Salter, F.R.S., Assistant Physician to Charing-Cross Hospital.

[The two conditions—hematuria and uræmia—are often coexistent, but each often exists alone. We constantly get blood in the urine, without there being the slightest evidence of urea in the blood, the functional power of the kidney not being in any way lost.]

Though the meaning of the word hematuria is peculiarly definite, and its existence most easily recognisable, its pathological significance is peculiarly uncertain, and the diagnosis based on it wide and doubtful. Any condition in any part of the urinary (or genital) passages giving rise to the escape of blood may cause hematuria; and the presence of blood in the urine, taken *per se*, tells no more than that such a condition somewhere exists. A patient may have a calculus lodged in the pelvis of his kidney, and hematuria may be a principal symptom; a man suffers acute congestion of his kidneys from exposure to cold, and straightway hematuria appears; a child has scarlatina, and a fortnight afterwards passes urine black with blood; a man falls on his back across a pole, and, the next time he passes urine, it is seen to contain blood; a woman is menstruating, and she has temporary hematuria; a man has been catheterised, and blood is passed in his urine. Stone in the bladder, simple ulceration of the mucous membrane of the bladder, fungus hematodes of the bladder, malignant disease of the kidneys, are all frequent causes of hematuria. There is a peculiar and common idiopathic hematuria in children, the blood evidently coming from the bladder; and there is a form of bleeding from the mucous membrane of the bladder, without any apparent structural change in it, not at all uncommon in old men. Hematuria is sometimes the principal form of bleeding in cases of diathetic hemorrhage. In all these ways, and I dare say in many more, hematuria may occur; and urine slightly smoky or black with blood, may be shown you; and you simply know that it is bloody urine—you know just that, and nothing more. A naked-eye inspection of the *pôt de chambre* will not take you a step beyond this simple fact.

When I say *not a step*, I am saying perhaps too much; in one or two cases it will, I think, take you just a *step*. I think, for instance, that hemorrhage from the ultimate structure of the kidneys never has a redness such as we see in some other urinary hemorrhages, as from vesical calculus, for instance; and I think, too, that the temporary hematuria of menstruation has a distinctive appearance; it looks simply like urine, *plus* a little fresh blood, and may be simulated exactly by mixing a few drops of blood with urine out of the body; it never has the *smokiness* of many other hematurias. This slight negative information a mere naked-eye inspection *may* furnish; but, beyond this, I think my observation holds good.

How, then, are we to determine whence the blood comes? I think there are few cases indeed that will leave this at all doubtful, after a thorough sifting of the symptoms, local and general. But short of this, without a lengthened examination of the case, I think we may at once determine, within certain limits, what is the seat of the hemorrhage. We may say at once that the blood does or does not come from the ultimate structure of the kidneys; we may say that it does or does not come from the urethra; and we may say that it comes from some part of the urinary tract of mucous membrane below the one and above the other; and thus—

If we find blood-casts of the uriniferous tubes, we know that the blood is Malpighian, the hemorrhage ultimate renal. If a thorough examination of the urine fails to find any casts, the blood, *if at all abundant*, is *probably* not from the ultimate structure of the kidneys.

If the blood is passed without any urine, or without the act of micturition, it is urethral. If, too, it is confined to the first jet of the stream, it is urethral. If, again, it is confined to the last drop or two, the last jet by the ejaculator urinæ, it is probably urethral, and situated in the bulb.

If the blood is never passed except by an act of micturition, and intermixed with urine, and there is a clear absence of casts, then it comes from above the urethra, and below the ultimate kidney-structure; but "further this deponent sayeth not" It may be from the pelvis of the kidney; it may be from the ureter; it may be from the bladder.

You can, then, in this simple way, by a look with the microscope, and one or two plain questions, without any reference to the general symptoms, reduce yourself to this triple alternative, if I may use the expression: you can tell if it comes from the urethra, from the recesses of the kidney, or from some uncertain point between the two.—*British Medical Journal, March 22, 1862, p. 300.*

## 42.—"DUMB BELLS" OF OXALATE OF LIME, FROM A CLINICAL POINT OF VIEW.

By Dr. Lionel S. Beale, F.R.S., Physician to King's College Hospital.

Oxalate of lime, as is well known, occurs in human urine in two different forms:—1. In well-defined octohedral crystals. 2. In the form of spherical or oval masses more or less resembling a "dumb-bell" in their general appearance, and spoken of as "dumb-bell" crystals. In very rare instances, this salt crystallizes in other forms than those above-mentioned, but these need not now engage our attention.

The octohedral crystals of oxalate of lime are not generally present when the urine is voided, and they do not commonly make their appearance until some time after the secretion has left the bladder. In not a few instances this urinary deposit actually results from changes occurring in the urates after the urine has been allowed to stand for some time. Minute octohedra having once made their appearance, may be seen in some specimens of urine to increase in size during some days. In other specimens, however, no such alteration takes place. The minute octohedra are most frequently met with, and they form one of the most common urinary sediments.

The presence of octohedral crystals of oxalate of lime in the urine does not necessarily depend upon the existence of any peculiar habit of body or diathesis; indeed, in the great majority of cases in which the deposit occurs, no special symptoms are associated with it.

There is reason to believe that the crystals are not discovered in very many cases in which they are present, from the attention not being directed to an examination of the urine, owing to the absence of any symptoms indicating a morbid condition of this secretion. But little assistance in the diagnosis of many cases is afforded by the presence of this deposit in the urine; and one may even go so far as to say that, as a general rule, it is of no clinical importance whatever. It is found in the most opposite conditions of the system, being common enough in the urine of poor, broken-down subjects, and in that of well-nourished country gentlemen. It often appears if we live too well and take too little exercise. It is common enough in chronic pulmonary affections, as chronic bronchitis and emphysema. In dyspepsia, in jaundice, in general debility and over-fatigue, and in persons who have over-worked their minds it is generally found. Like the urates, it probably indicates that the processes connected with oxidation are not performed to their fullest extent. I have found it, however, and on several occasions, in very large quantity, in the urine of men who appear in all other

spects in perfect health. Mineral acids, tonics, fresh air and xercise, and attention to the action of the skin and careful gulation of the diet, especially as to quantity, will generally nuse the formation to cease in those cases in which it is desirable interfere at all. There are, however, cases where oxalate of me is found in the urine which are characterised by the presence most important symptoms requiring active interference on the rt of the practitioner; but in such instances he is influenced the view he takes by the general character of the symptoms ther than by the fact of the presence of the oxalate of lime the urine.

*"Dumb-bell" Crystals.*—The presence of the dumb-bell crystals the urine is by no means unimportant clinically. These ystals do not increase in size after they have been allowed to main in the urine. They are always present when the urine first passed. They never result from any changes occurring any constituents of the urine after the secretion has left the adder. Dumb-bell crystals are occasionally present in the sts of the uriniferous tubes, and have been found impacted in e tubes of the kidney. There can be no doubt that these eculiar crystals are formed in the secreting tubes.

I have seen small collections of dumb-bells in the urine, and ave specimes of small oval calculi not more than the $\frac{1}{200}$th of inch in length. The latter, like the former, consist of xalate of lime, and seem to have been formed in the same anner. In some specimens, several dumb-bells which are nnected together to form a small compound mass, are seen vary much in size. A few of the largest crystals seem to be creasing at the expense of the smaller ones, and at last the ntire mass consists of only one or two comparatively large ystals.

These dumb-bell, spherical, and oval masses of oxalate of me formed in the secreting tubes of the kidney, are, in truth, icroscopic calculi, and they frequently form the nuclei of rger concretions. I have examined several specimens of small lculi, and in the great majority have actually found dumb-ll crystals in the centre. In the small uric acid calculi which e not unfrequently formed in great number, it is easy to monstrate this point. If the uric acid be very carefully dis-lved away by solution of potash, the dumb-bells will be found the slight residue which has resisted the action of the alkali. have now repeated these observations on more than ten spe-mens from different persons, and think that dumb-bells very nerally form the true nuclei of uric acid and oxalate of lime culi. Dumb-bells are sometimes passed in considerable num r in the urine of patients who are suffering from the formation small uric acid calculi, and I have now under my care a

patient who has for months been passing large quantites of blood in the urine with several masses of a brownish colour looking like shreds of fibrinous matter. Upon examination these were found to consist of pus and blood corpuscles, probably fibrinous matter, crystals of hæmatin, numerous fungi, and hundreds of dumb-bell and spherical crystals of oxalate of lime.

*Treatment.*—From the above facts it seems important that we should endeavour to get rid of these dumb-bell crystals or minute calculi when we know they are formed, and employ means to prevent their formation in cases in which the tendency exists. The first object is attained by making the patient take once a week large quantities of fluid during a few hours of the day. Vichy and other alkaline waters, or a solution of bitartrate of potash, may be given. Thus the quantity of urine secreted is very much increased, and these crystals are washed out of the tubes. To diminish the tendency to the formation of this urinary deposit, attention must be paid to the general health, and especially to the state of the digestive organs. Iron, quinine, and other tonics may be given according to the general state of the patient, but air, exercise short of fatigue, and a diet regulated as to quantity according to the proportion of nutrient material required by the system, are of the first importance.—*Medical Times and Gazette, Jan.* 4, 1862, *p.* 6.

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## 43.—RECOVERY FROM BRIGHT'S DISEASE.

By Dr. Thomas Williams, F.R.S., Physician to the Swansea Infirmary.

Twenty years ago, Bright's disease, in all its forms, was believed to be incurable. Ten years later, it came to be admitted that recovery was possible from some of its varieties. This change of opinion was in great part due to the researches of Dr. George Johnson. The investigations of living pathologists and practical observers place it now beyond doubt that *permanent* and *complete* recovery may take place, under certain circumstances, from this disease. But though this conclusion has been deliberately arrived at by a few special investigators, it is by no means accepted by the profession at large. No physician acting on behalf of an insurance company will, even at the present time, pass as "healthy" the life of one who has once been the subject of albuminous urine (that from scarlet fever excepted). It is therefore believed that the cases which are recorded in this paper will constitute no uninteresting contribution but on towards a better knowledge of the natural history of this disease. In the narrative of these cases all details will be studiously avoided, such particulars only will be stated as will enable

the reader to perceive the form or type of disease under which they should be classified.

*Case* 1.—Twenty years ago, a medical student in whose fate I was deeply interested, and whose age was 22 years, became affected with an illness under the following circumstances. At the end of the winter session in one of the London hospitals, at which he had been severely working, and while enjoying his ordinary health, he was seized in one night with bloody urine and frequent desire to pass it. The urine was first discovered to be dark in colour and much reduced in quantity on rising in the morning. His suspicions were excited as to this symptom, and he went to Dr. Barlow, who tested the urine, and found, upon the addition of nitric acid, that it was literally converted into one clot of albumen. My friend on the following day visited Dr. Bright, who at once pronounced the urine to be highly albuminous, and recommended the patient to leave town for the country, holding out no hope of recovery. I then accompanied my friend to Dr. Prout, who, after careful examination, said that the case was one of hæmotrophy of the kidneys, the urine being bloody, highly albuminous, and of high specific gravity. Satisfied, now, that he had become the subject of Bright's disease, my friend resolved to leave for the country. Neither Dr. Bright nor Dr. Prout would hold out any hope of recovery. Dr. Prout said that he had known several people who had gone on for ten years in comparative health, the urine being constantly albuminous. Dr. Golding Bird, upon whom we called just before our departure from London, manifested the strongest and warmest interest in the case, and stated, after a patient examination, that the case was one of "acute congestion of the kidneys." Neither of these physicians recommended lowering treatment.

Our return to the country was made on the tenth day after the first appearance of the symptoms. The urine was still scanty—less than three quarters of a pint in the twenty-four hours; the dropsical symptoms every day increased; the urine was as dark as porter and highly albuminous; the skin was dry and feverish; the breathing was growing in tightness and difficulty. In a fortnight further the body had greatly increased in size, while the urine had scarcely at all augmented in quantity. Convinced that he was going to die, greatly alarmed at the swelling and the difficulty of breathing, the patient determined to resort to the compound jalap powder and warm baths. From this moment a change for the better became evident; the skin began to act, and the urine increased in quantity. Thus he continued for three months.

About this time he again visited Dr. Prout, who reported that the case was going on favourably. The urine had increased in volume; the skin was acting; the dropsy had diminished very considerably; the quantity of albumen in the urine had also become much smaller, although large enough still in amount to form a clot, and it had become smoky in colour, indicating a great reduction in the proportion of the red corpuscles. He prescribed the citrate of potash and iron.

Dr. Prout, on this occasion, introduced us to Lord S., who was (in 1843) labouring under precisely the same symptoms as my medical friend. We then again repaired to the country, a constant correspondence being kept up with Dr. Prout. For six months the patient continued gradually to improve. At this period the dropsy had entirely disappeared, he had become pale and thin, the urine had greatly increased in quantity, and micturition was frequent both during the day and the night. The urine, allowed to stand in a long conical glass, deposited masses of casts, epithelial scales, oil-globules, red corpuscles, and granules. Possessed of a good microscope, my friend made repeatedly beautiful drawings of these objects. It would be easy to prove, by reference to his elaborate notes, that he fully anticipated Dr. Johnson in his definition of the fibrinous casts. He invariably stated that they consisted of fibrin which had undergone coagulation in the uriniferous tubes; that the epithelia constituted the scaly lining of these tubes; that the oil-globules had been secreted by these cells into their interior, as Bowman had explained as regards the oil and cells of the liver.

For eighteen months this case was most minutely watched. During this time the urine averaged three pints in twenty-four hours; it continued to present a slight muddy or smoky tint, in specific gravity it never fell below 1012; the albumen gradually lessened until at length it contained no clot, but only a slight granular opalescence was formed under heat and nitric acid. The patient was still pallid, dyspeptic, and nervous; but active in intellect and bodily habits.

It could not be said that the albumen had entirely and completely disappeared from the urine until two years had elapsed from the first attack. For several years (certainly three or four) after this date, there persisted a slowly-decreasing amount of renal irritability—that is, micturition frequent at night, and the urinary secretion was rapid and excessive in the day if a *stimulus* at any time were taken. At the end of two years it was easy to detect, in specimens of the urine which had been allowed to stand for some hours, a few casts, cells, and oil-globules. No return of the bloody urine after the first onset ever took place, nor of the general œdema. No evidence of

any serous inflammation at any stage of the case ever occurred. Palpitation of the heart, caused by an anæmic condition for some years, was complained of.

Nearly twenty years have elapsed since my friend was downstruck by his attack. He is now in perfect health. The urine has been perfectly healthy for at least fifteen years. He has never experienced the slightest relapse or return of the original symptoms.

It should be stated that the subject of the above case experienced a severe attack of scarlet fever at the age of 16 years. During the interval which elapsed between this date and the time when he became the subject of Bright's disease, he passed through a severe illness from typhoid fever. He believes, from the account given him by his mother, that slight dropsical symptoms followed his illness from the scarlet fever.

*Case* 2.—In 1843 and 1844, when my patient and myself were visiting Dr. Prout, the latter introduced us to Lord S.; he conducted the analysis of the urine in our absence; it was bloody, albuminous, and scanty, and the patient was dropsical. The course and stages of his case have been most remarkably similar to those of Case 1. A recent communication has assured me that his lordship has been in the enjoyment of perfect health for many years, and is so at the present time.

*Case* 3.—In 1844, in the practice of the late Mr. Terry, of this town, there occurred a case which came under my especial notice. A collier, aged twenty-one years, became dropsical. Mr. Terry and myself examined the urine: it was scanty, and had been so for eight or nine days; it was red in colour and highly albuminous. The body was swelled considerably, the breath tight, and the skin hot and feverish. Mr. Terry, who was then an old practitioner, remarked that such cases had been familiar to him for many years, and that he had always been in the habit of treating them by *bleeding*. He withdrew about eighteen ounces of blood; the patient fainted. I watched him narrowly for a month. On the day following the bleeding, the breathing had improved, the urine increased in amount, the skin became moist, and the albumen diminished in bulk. In six weeks he was at his work again. For fifteen years I have from time to time seen this man: he has never had a return of the blood or of the albumen in the urine; he has never suffered from pleurisy, and the urine is now quite healthy.

*Case* 4.—The late Mr. Terry, who was concerned with a fatherly interest in the case of the medical student which I have described, being summoned to visit a farmer's son, who was eighteen years of age, requested me to accompany him. This

was in the autumn of 1844. We found the patient swelled with dropsy everywhere; the urine very small in bulk, like porter, highly albuminous. Mr. Terry took away blood to syncope, according to the fashion of that time amongst country practitioners. Deeply interested myself, I continued to watch this young man for some time after. He certainly was quite well in two months from our first visit. I know him to be at the present time a fine, strong, hearty man. He had never had scarlet fever, and has never suffered from illness since that time.

*Case* 5.—In 1845, I was requested to visit a patient in company with the late Dr. Rowland, of this town. Dr. Rowland knew my medical friend, and took much interest in his case. As soon as a case occurred to him which appeared to be similar, he drew my attention to it. We went. We found a young man, about 20 years of age, in a highly dropsical state; the urine sanguineous and scanty, clottily albuminous. The patient had been in this state for some days. I related to Dr. Rowland the treatment adopted by Dr. Terry in such cases. I contrasted it with that of the great London physicians. He agreed that we should adopt an intermediate course. Our patient was purged, cupped on the back, and put on low diet. He was six months in recovering, but he did recover, and has ever since been quite well. I have only recently seen him; he is perfectly healthy.

*Case* 6.—A young clergyman, in 1845, came to me in great distress. He was about 25 years of age, and had lately entered upon a curacy. He had for some time suffered from indigestion. Suddenly he found that he was swelling, and that his urine was becoming scanty and high-coloured. I found that it was charged with blood corpuscles, that it was highly albuminous, and of high specific gravity. I treated him as Dr. Bright, Dr. Prout, and Dr. Golding Bird had treated my friend. He was purged every morning with the compound jalap powder, and very soon he was put upon mild preparations of iron. He was at least two years in recovering, but he is now quite sound and hearty. I am not aware that he has ever experienced any illness from that time to this.

The preceding six cases I venture to relate as cases of perfect and lasting recovery from Bright's disease.

During the last twenty years I have seen many others. I am sure that many of them are now alive—some of 10, 8, 7, 6, and 5 years old. During the last few years many of my "Bright patients" also have died.

Twenty years ago, not for a moment supposing that the life of my medical friend would have been long vouchsafed, I grasped with eagerness at points of relevant practice, and noted the inci-

ents of every case occurring either in my own practice or that f my friends. I feel quite confident that the mode of treatment dopted by the practitioners of that time was the most happy nd the most rapidly successful. In every case, *at the right stage*, n which venesection was resorted to recovery was rapid. In ecent years, I have never hesitated in my own practice, in cases vhich Dr. G. Johnson has so excellently described as those of 'acute desquamative nephritis," which corresponds with the æmotrophic kidney of Prout, and with the first stage of the arge white mottled kidney of more recent writers, to conduct he treatment upon the antiphlogistic plan. Of late years, from ny own experience, the conviction has strongly grown upon me hat under appropriate, judiciously-directed management, every ne of these cases of hæmotrophy *ought* to issue in permanent nd complete recovery. But, alas! in this country thousands f persons die under this unquestionably *curable* form of renal isease. As soon as the urine becomes bloody and albuminous, nd the system œdematous, resolute treatment should be adopted.

Ever since it was my fate to track the march of the symptoms n the case of my medical friend, I have been convinced that is recovery would have been much more speedy if the treatment ad been more decisive. But that is past. Let us deduce the esson. In every instance in which recovery has taken place, he urine has been bloody and its specific gravity high, the ystem œdematous, the general power good. In the rapid ecoveries, venesection has been adopted; in the slow recoveries ndifferent treatment has been resorted to. The latter, modiedly, may be the right course in large cities; in the country nquestionably the former mode of practice is the best. In no ingle instance in which the urine has slowly and insidiously ecome albuminous, in which the system seldom becomes œdeatous, in which the urine never presents a bloody tinge, have known recovery to have occurred. In such cases the kidneys re small, contracted, and granular; and, with Dr. Dickinson, I elieve in the specific distinctness of such cases from those comencing with œdema and bloody urine. From all that I have bserved, I yield my support to those who maintain that the atty and amyloid degenerations are stages of one declensionary ourse, and that they draw their commencement from the hæmorophic kidney.

No observer in England has studied the conditions of the eneral system which always prelude the development of kidney isease. These preliminary stages do exist, and are well marked. n another occasion they shall be discussed.—*Lancet*, *Nov.* 23, 861, *p.* 492.

44.—*Albuminous Urine.* By METCALFE JOHNSON, Esq., Lancaster.—In examining albuminous urine I have observed a source of fallacy in the nitric acid and heat test which is new to me, and very interesting, but which I have never seen noticed in works upon the subject. It is the prevention of coagulation by heat through the agency of nitric acid.

It is laid down as an axiom that urine clouded by heat indicates either albumen or phosphates. If the former, nitric acid increases the turbidity ; if the latter, it clears it. By reversing the operation in urine highly charged with albumen, adding to a drachm of urine one drop of nitric acid, a precipitate falls, which after shaking is redissolved by heat. The solution on cooling forms a solid jelly, which I presume is gelatine. This, however, is not redissolved by heat. If excess of nitric acid is applied so as to precipitate all the albumen, the heat does not dissolve it.

The error of supposing urine containing albumen to be non-albuminous might be brought about thus : Supposing a test-tube, in which nitric acid had been largely applied, to be simply put aside, after emptying the contents, without washing, and taken for the next experiment by mistake for a clean tube, the urine on boiling will become clear, and thus deceive the operator into the impression that he was dealing with urine free from albumen.—*Lancet, Nov.* 16, 1861, *p.* 487.

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45.—*The Influence of Arsenic upon Albuminuria, in a Case complicated with Psoriasis and Lichen.* Under the care of Dr. FRED. FARRE, at St. Bartholomew's Hospital.—The tonic and anti-periodic effects of the liquor arsenicalis are well known in the practice of medicine. According to Dr. Anthony Todd Thompson, it determines to the surface, equalizes the circulation, excites the cutaneous capillaries, and improves the general action of the skin. Some months back we watched with considerable interest a case of acute renal anasarca, which became complicated with psoriasis and lichen, for which this solution of arsenic was employed, and with extremely beneficial effects upon the quantity of albumen in the urine.

The patient was a female, aged nineteen years, who was admitted with acute renal anasarca of two weeks' duration, possessing all the usual characters of that affection, with the urine not only highly albuminous, but very smoky. For this condition she was ordered suitable treatment. About a month after her admission, an eruption of psoriasis appeared, associated with lichen, on the arms and hands, for which she was ordered five minims (afterwards increased to seven) of Fowler's solution, in peppermint water, three times a day. This was found to be

of service, not only in dispelling the cutaneous eruption, but also in diminishing the quantity of albumen to such an extent that it had almost wholly disappeared from the urine. In two months the eruption had much diminished, and was quite cured by the tenth week ; and although the albumen had all but gone, it subsequently reappeared in very small quantity whilst taking the arsenic. Besides other treatment, she had alkaline baths and creasote ointment. She left the hospital comparatively well at the end of the twenty-fifth week, being much stouter and altogether looking a great deal better. The arsenic had acted evidently as a powerful tonic, and exercised a very decided influence on the albuminuria.—*Lancet, Jan.* 18, 1862, *p.* 68.

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## 26.—ON THE INFLUENCE OF ALKALIES IN CHECKING THE PRODUCTION OF ARTIFICIAL DIABETES.

By Dr. F. W. Pavy.

[Dr. Pavy has already shown that diabetes may be artificially produced in an animal by injuring certain portions of the sympathetic. He now shows that this effect may be prevented by the influence of an alkali; the amyloid substance previously called by him hepatine disappears without any production of sugar.]

The following is a summary of the facts brought forward at present :—

That the introduction of carbonate of soda into the circulation prevents the production of saccharine urine after lesions of the sympathetic otherwise occasioning it.

That the carbonate of soda injected into the general venous system does not prevent the urine from becoming saccharine after the destruction of life, when the circulation is kept up artificially; but, injected into the portal system, so that all may pass through the liver, it has the effect of keeping the urine entirely free from sugar.

That carbonate of soda, injected into the portal system during life, causes a rapid disappearance of amyloid substance from the liver, without any sign of the production of sugar.

That in the disappearance of the amyloid substance, under the influence of the carbonate of soda, it is not concealed nor transformed into sugar, nor destroyed by any direct chemical power possessed by the carbonated alkali. The facts before me would suggest that it is transformed by a process of the nature of catalysis, the product having escaped as yet being discovered.

That the carbonate of soda, injected into the liver after death does not effect a disappearance of the amyloid substance, but

even in moderate quantity holds the saccharine metamorphosis completely in check.

That there is probably a close connection between the disappearance of the amyloid substance, the production of fat, and the condition of the bile.—*Guy's Hospital Reports, Vol.* vii, *p.* 208.

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47.—*The Influence of an Acid in producing a Diabetic State of the Urine.* By Dr. F. W. Pavy.—[Dr. Pavy then proceeds to show that an acid produces diabetes. He injects phosphoric acid into the general circulation. He says :]

It is evident that, when a sufficient quantity of acid is introduced into the circulatory system, the operations of life are so altered that sugar appears to such an extent in the blood as to occasion a more or less strongly marked saccharine state of the urine. From all that I have seen, it appears to me reasonable to conclude that this result is due to a perverted condition of the processes belonging to the liver. The unnatural state of the blood occasioned by the presence of the acid seems to induce the change of amyloid substance into sugar. It seems to promote that change, the result of chemical action, which occurs with such activity after death, and which must be held in abeyance under natural circumstances during life, sugar being found in the system to so scarcely an appreciable extent.

When the quantity of acid used has been large, the blood nearly loses its power of coagulating. In some of my experiments, also, I have noticed that such a morbid state has been induced as to lead to an escape of blood from the vessels during life. I have met with ecchymosis of the liver and stomach, an accumulation of blood in the stomach and intestine, and the presence of blood in the urine.

Looking upon the effects of the acid injection as due to an action upon the liver, it occurred to me that this organ might be much more directly influenced by injecting the acid into a branch of the portal system, instead of the jugular vein. It happens, however, that a circumstance occurs to render this mode of experimenting unsuccessful. Although I have never found the acid lead to a solidification of the blood in the vessels when introduced into the general circulation—indeed, as I have mentioned, the effect is the reverse of this—yet when injected into the portal system, it causes the blood belonging to this system to solidify, and the vessels to become so plugged up, that the circulation of portal blood is completely stopped. I have made five experiments in this way, and in all but one, the effect referred to has occurred. In three of the cases, the acid was introduced undiluted, but injected very slowly into one of

the mesenteric veins; and in each, under an ounce was used: in the fourth, six drachms of the acid, diluted with twelve drachms of water, formed the injection employed. All the dogs died in less than an hour and a half; and the trunk of the portal vein, with its larger divisions in the liver, was found plugged up with solidified blood, so as entirely to check the circulation. The tissue of the liver was, in places, white and hard, as if it had been chemically acted upon by the acid. There was no sugar to be detected in the urine; and the liver, submitted to an ordinary examination after death, behaved in the usual way. From one of the experiments, I learned that the effect produced by the acid in solidifying the portal blood instantly occurred on the first portion of the injection being made, so that the portal circulation was at once stopped; which would account for the absence of any sugar in the urine.

In the experiment where the circulation remained free, half an ounce of the acid was used, diluted with two ounces of water. The injection was slowly made. The urine, in an hour and a half's time, was found to contain a slight amount of sugar. Two hours after the injection, when life was destroyed, the liver was perfectly natural in appearance, and all the vessels unobstructed. There was, therefore, no engorgement of the spleen, nor blackening of the intestine from congestion, as was the case in the other experiments.

Finding this mode of experimenting proved objectionable, I next tried the effect of introducing the acid into the alimentary canal, instead of directly into the portal system. Injecting it into the stomach was of no use, for it very soon induced vomiting, and was rejected. Half an ounce of phosphoric acid, injected into an empty stomach through a tube passed down the œsophagus, I found rapidly to occasion repeated acts of vomiting. Resorting to the use of chloroform, I, therefore, introduced the acid into the duodenum or some other portion of the small intestine.

I have a record before me of five experiments that I have performed in this way. They in the most striking manner show that an excess of acid in the system occasions the production of saccharine urine.—*Ibid. p.* 210.

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48.—*On the Dietetic Treatment of Diabetes.* By Dr. F. W. Pavy.—We are in a position, I conceive, safely to say thus much concerning the nature of diabetes. In the healthy person, the starch and sugar consumed as food are assimilated, and rendered subservient to the requirements of the economy. In the diabetic, there is an absence of this power of assimilation, so that whatever of such food is taken, on account of its not being

properly elaborated, it filters through the system in obedience to the simple laws of physics. I believe, in thus passing through the system, the sugar in such quantities so alters the natural character of the blood as to unfit it for properly performing the healthy operations of life, and in this manner occasions the functional disturbances and structural changes that occur in diabetes. The obvious rational plan of treatment (until a means can be discovered for restoring to the body what is deficient, or correcting what is faulty) is restriction from food charged with the unassimilable materials.

The sugar that may still continue in the urine under abstinence from vegetable food results, I consider, from a non-assimilation of the amyloid substance manufactured by the liver out of the materials resulting from the disintegration of tissue and the retrograde metamorphosis of aliment absorbed into the circulation in excess. As long, however, as the sugar in the urine can be kept down to ten, twelve, or even fifteen hundred grains a day, my experience so far as it has extended is, that the patient does not in any way know of the existence of his complaint otherwise than by the necessity of restricting himself to the regimen essential to attain this object. With only such an amount of sugar escaping, I believe that the blood remains adapted for the healthy performance of all the functional operations of life.—*Ibid, p.* 382.

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## 49.—GLUTEN BISCUITS FOR THE DIABETIC.

By Dr. John Camplin, Islington.

I wish to call the attention of the profession to a new preparation for the diabetic, which appears to me important. I allude to the gluten powder and biscuits now prepared by Mr. Blatchley, and sold by him under the title of English Gluten.

It is not necessary that I should describe the unpleasantness of the old preparations of gluten, nor discuss the merits or demerits of the French preparations at present in use; it is sufficient to observe that they have proceeded on a principle of obtaining something analogous to fermentation. In this new preparation nothing of the kind is attempted; the gluten is made as free as possible from starch, and then brought into a state in which it may be made into cakes or biscuits.

This preparation, will, I expect, be generally agreeable to patients; and I regret that it cannot be furnished so cheaply as the bran, and is therefore less fitted for hospital use. It is, however, less expensive than the French gluten, and a small allowance will suffice. Whether the bran or gluten is used, I prefer that the powder should be purchased and made into cakes at home; but those who wish to avoid all trouble will find the gluten biscuits very pleasant.—*Med. Times, Nov.* 30, 1861, *p.* 568.

## 50.—ON THE DIET OF DIABETIC PATIENTS.

By Dr. F. W. Pavy.

[The following is part of a letter by Dr. Pavy in answer to Dr. Camplin. The two physicians are rather at issue on the subject of the diet proper for diabetic patients.]

Dr. Camplin says, "I am induced to make these remarks, inasmuch as a cursory view of Dr. Pavy's case would lead the reader to suppose that the bran and gluten had better be dispensed with, since the urine and sugar (although far below what they were during the mixed diet) increased during their use." Such, I must say, is the opinion I have formed from the results observed in this and in other cases. I do not deny that instances may occur where it may prove desirable to allow the bran biscuit or gluten bread; but, looking at diabetes in the light there is reason to consider it ought to be regarded, the exclusion of food containing starch and sugar, rationally constitutes the most essential point in its treatment.

Without entering into any theory, it may be stated that the disease is attended with a want of proper assimilating power over the saccharine element of our food. When bread is consumed by a healthy person, its starch and sugar are so influenced after reception into the system, that they become susceptible of appropriation to the requirements of the economy. They no doubt administer to the production of fat, and are concerned with the maintenance of animal heat. In the case of the diabetic, starch and sugar do not follow a similar course. The saccharine principle remains unassimilated, and simply filters through the system unconsumed, creating in its passage through the blood, such an alteration of its natural constitution, as to give rise to those disturbances and, but too often, fatal consequences concomitant upon this disease. From what I have seen, the intensity of the morbid symptoms vary with the degree of saccharine saturation of the blood; keep down the amount of sugar in the blood, as by avoiding its introduction through external sources, and although the patient's disease is not cured, yet his symptoms are relieved. By restoring the blood as near as possible to its natural constitution, we conduce to the healthy performance of the nutritive and other operations of life. But patients sometimes get rid of their complaint; and if there is anything that can favour the production of such an issue, I should say it is keeping down their sugar to the utmost extent possible. In North's case I never got lower than 569 grains during the day; but this was a reduction from upwards of 9000 grains, which he passed in a full mixed diet at the commencement. In another case, where the disease was of about the same intensity as in North, I once observed the sugar

fall to 116 grains for the twenty-four hours, and the quantity of urine to 33 ounces. No one at this time could have judged that the patient was affected with diabetes, so robust and healthy an appearance did he present.

I must confess I cannot see the force of Dr. Camplin's argument about an animal diet being fit for the South American, and yet necessarily proving injurious to the Englishman, by producing "serious congestions," unless, as further suggested, "it either passed off very partially digested, or the diabetic drain continued to a considerable extent." I fully concede that man may be looked upon as naturally an omnivorous feeder; but there is sufficient evidence to show that either an animal or a vegetable diet may be taken alone, and will prove adequate for all the requirements of life. Vegetarians contend, from their personal experience, that we do wrong by taking any animal food; and it is a fact beyond dispute that the inhabitants of certain parts of the globe do not know the taste of vegetable food. Arctic discoverers relate to us that the inhabitants of the extreme North live purely upon animal food; indeed, there is none other procurable from the region they inhabit, for them to consume. Seeing that animal food contains all that is requisite for us, and that our organs are thus shown to be adapted to the digestion and assimilation of it, under the exclusion of any other, I cannot admit, with the known power generally possessed by the human body of accommodating itself to the most varied external circumstances, that the Englishman's capacity is limited within such narrow limits as to render him, "in his climate and with his occupations," incapable of subsisting on a purely animal regimen. But, beyond this, experience has not only now, but in former times, proved that the diabetic may be converted, and with advantage to his complaint, into an animal feeder. Use is truly, as well as proverbially, second nature. After a little time I have seen, both in private and hospital life, the animal regimen taken with relish, and without leaving a longing after vegetable food. With the different kinds of meat and fish, combined with eggs, cream, and jelly, a sufficient variety may be easily obtained to satisfy the palate. But there is no reason that such vegetable materials as greens, spinach, and water-cress should be prohibited, as these do not prove injurious to the disease.—*Medical Times and Gazette, Dec.* 7, 1861, *p.* 591.

# SURGERY.

## AFFECTIONS OF THE BONES AND JOINTS, ETC.

### 51.—ON AMPUTATION BY RECTANGULAR FLAPS.

By Oliver Pemberton, Esq., Surgeon to the General Hospital, Birmingham.

[The advantage of amputation by a long and short rectangular flap was first shown by Mr. Teale, of Leeds, whose paper on the subject will be found fully given in Retrospect, vol. xxxviii., p. 159. The advantages claimed by Mr. Teale for this mode of proceeding are—1st, The avoidance of tension; 2nd, The formation of a soft covering for the end of the bone, consisting of parts free from large nerves; 3rd, The lessened tendency to pyæmia in consequence of the non-disturbance of the plastic process; 4th, The favourable position of the incisions for allowing a free outlet for purulent and other discharges. Mr. Pemberton now claims to be able to speak from abundant experience as to whether these advantages have been realised. He first proceeds to consider the absence of tension in the early coaptation of the flaps.]

In all amputations, no matter where performed, or by what method, more mischief is developed by undue stretching to close the face of the stump, aided by bandages and plasters, than is produced by any other circumstance belonging to the first stages in the treatment of such operations.

The desire for that impossible "union by the first intention" may have much to do with this, especially when it is believed in with deficient materials and an intruding bone; but let this be as it may, we shall rightly give a preference to that form of amputation which enables the most inexperienced to measure his flaps with the closest accuracy.

The rules for measurement, laid down by Mr. Teale, render the fitting of the flaps, under all circumstances, a matter of certainty. The angles of the flaps and the edges of the wound are kept in apposition by wire or thread sutures. These may wear their own way out. The stump is simply laid on a pillow covered with a sheet of gutta percha tissue, and permitted to ooze and discharge unrestrained by dressing or bandage of any description.

Under these circumstances there can be no tension. Whatever may be the circumference of the limb, the length of the flaps will be equal to the emergency, provided their measurements are accurately assured. A very satisfactory illustration of the truth of this remark occurred in a case under the care of my colleague, Mr. Bolton, where, from long-standing necrosis of the lower part of the femur, the soft parts of the thigh having become enormously thickened, it was feared that the long flap would not prove of sufficient length to overcome the unusual denseness of its tissues; it was otherwise, however, for it fitted without difficulty, and an excellent stump resulted.

The formation of a soft covering for the end of the bone, and the ability of the stump, thus constituted, to sustain the weight of the body wholly or partially, is the next matter for consideration.

Wherever amputation is performed by Mr. Teale's method, I believe that a durable cushiony stump may be obtained, capable of bearing a considerable amount of direct pressure on its face—containing neither large nerves nor blood-vessels, and absolutely devoid of cicatricial tissue, and in many respects, indeed, comparable with the best of all stumps—that which we owe to Mr. Syme at the ankle-joint.

This fact, from the mode in which the soft parts are folded over the end of the bone, and the resulting cicatrix is rendered distant from the bearing point, can hardly admit of question, and it is no inconsiderable merit in the proceeding that such a description can be given; but whilst we admit thus much, are we prepared, in all situations and under all circumstances, to abandon the transfixion and circular methods in its favour?

All who amputate much, and care to examine the stumps in after years, when wear and tear have told their story on their shapes, know that in by far the more numerous instances they fail in the promises they seemed to give of being able to sustain a direct pressure on their ends, and in many cases degenerate so as to become frequent sources of annoyance, and even of disease.

This inability to bear pressure is especially observable in amputations of the lower third of the thigh and of the leg, when performed, as has hitherto appeared to be most desirable, in these situations, by the circular, in preference to the transfixion method.

The length of limb left in these instances is a strong temptation to both patient and mechanician to try what the face of the stump will bear. But the experiment does not succeed, and has shortly to be abandoned in favour of the

uber ischii on the one hand, or the lower part of the thigh on he other.

The method of amputation proposed by Mr. Teale appears o me, in these situations, to have supplied that want which he plans in previous use failed to afford. It has, indeed, only ne drawback, that arising from the length of the long flap ecessitating that the bone must be sawn through higher up han in either of the ordinary modes; for though in some nstances it may be possible to get a long flap from the anterior urface of the ankle-joint, it will not be prudent to take one oo close to the patella, for the chances of sloughing are by no neans in this spot to be forgotten.

In other parts of the thigh and leg the short anterior and he long posterior flaps, obtained by the ordinary transfixion nethod, appear to me to answer everything desired when pro-erly shaped. There ought to be, and I believe there is, in such nstances, an entire absence of tension. The healing process nay proceed undisturbed by strappings and dressings, and as to he large and small veins being possibly more exposed to take ip purulent matter—considering that the discharges can readily scape, and that the vessels divided have been so by the leanest sweeps of the knife, in contrast to a somewhat nig-ling and tedious dissection, I am at a loss, on these grounds, nd in the absence of any special statistics to the contrary, to nderstand why a preference should be claimed for the pro-eeding of Mr. Teale.

Flaps thus formed unite with their line of cicatrix well above he point of pressure, and can, in consequence, take their share n bearing the weight of the body. Moreover, as all the soft arts from behind go to form the long flap, these appear to me o be as truly folded over the bone to form the future cushion, s the same materials from the front are most correctly described o be in the plan of Mr. Teale.

I am by no means therefore prepared to abandon transfixion n these situations in favour of the rectangular method; but, as egards a circular amputation in the same localities, on the round that the end of a bone must be more capable of bear-ng pressure when covered by a mass of soft parts, that when nly protected by an adherent cicatrix, I should always, where racticable, rather advise recourse being had to transfixion or he rectangular flaps.

In the upper arm the modes of amputation as at present arried out, whether flat or circular, appear to me to satisfy ll the requirements that the Practical Surgeon or mechani-ian can desire, whilst in the forearm from the peculiarly ten-inous character of the part, and the necessity, always impera-

tive, to keep the stump as long as possible, I deem a change to the rectangular method to be decidedly objectionable.

In this great machinery district, accidents requiring amputation in various parts of the forearm are of most frequent occurrence, and from time to time every possible contrivance is required in the substitute to be provided for the loss of the skilled hand of the artisan; yet, during nearly fifteen years that I have watched the many stumps that have been made at our hospital, I can hardly call to mind an instance in which the circular method—the soft parts being sloped off from bone to skin—did not best meet the present and future exigencies of the case. This statement is, I am sensible, at variance with the opinion of some surgical authorities; but, apart from injuries, in which no choice remains than to make the best of what is left, I must confess my inability to form any other conclusion.—*Med. Times and Gazette, Dec.* 21, 1861, *p.* 632.

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## 52.—ON AMPUTATION OF THE FOREARM.

By Prescott Hewett, Esq.

There have recently been several cases of amputation of the forearm at St. George's Hospital which are worthy of special notice, in consequence of the well-covered and excellent stumps which resulted from the manner in which the operation was performed. It consists simply in making a circular incision through the skin of the forearm, drawing it well back, then making flaps of the muscles, and finally sawing through the bones. The healing process goes on with great rapidity, and the ends of the bones have a firm substantial cushion of muscle, which is perfectly covered by the skin. There is no redundancy of material, but a smooth, even, comfortable-feeling stump. The advantage of this is apparent in such a part of the body as the forearm, where it is desirable to fasten on some artificial means of manual support.

The first operation of this kind was performed by Mr. Hewett in October last for a crushed hand, the patient being up and about the ward in a week. A similar proceeding was practised by Mr. Johnson upon a man, John James B., aged 28 years, who was admitted into the hospital on the 28th December last. A third case that came under our notice was that of George C., a horsebreaker, aged 29, who was admitted on the 6th January with a crushed hand. When we examined him the amputation had been performed ten days: he was sitting up, apparently quite well; the stump had nearly healed, and was in every respect an admirable one. In one or two subsequent cases the same mode of amputation has been practised with equally good results, and we think it one well worthy of trial in other hospitals. *Lancet, March* 15, 1862, *p.* 277.

## 53.—ON THE THERAPEUTIC INFLUENCE OF MECHANICAL AND PHYSIOLOGICAL REST IN ACCIDENTS AND SURGICAL DISEASES.

By John Hilton, Esq., F.R.S., Surgeon to Guy's Hospital.

[It is commonly supposed that prolonged rest of a joint causes deterioration of it. This is erroneous. If the foot of a Chinese lady be examined, in which the joints have been compressed and motionless for twenty or thirty years, the articular surfaces will be found in a perfect condition, and the structure not in the slightest degree deteriorated. To take another instance.]

If you strap up a foot firmly in order to cure disease of one of the tarsal joints, do the other tarsal joints become anchylosed? Certainly not necessarily. Here is a beautiful illustration of this fact. It is the foot of a young man whose limb I removed for disease of the knee-joint. Upon the inner side of the foot there may he seen a well-marked specimen of anchylosis between the scaphoid bone and the astragalus, yet the joints nearest to it are not in any way involved in that mischief; there is no anchylosis; they are perfectly healthy. The anchylosis had taken place about two years previous to the amputation of the limb. It is a very typical instance of anchylosis, and I employ it for the purpose to which I am now referring—namely, to show that, although pressure by strapping the foot, quiet, and rest were resorted to during a long period, in order to cure the disease between the astragalus and scaphoid, yet the only two bones which became anchylosed were those between which the joint was in an unhealthy condition.

Again, is the larynx in a case of severe cut throat voiceless after a rest of six, seven, eight, or ten weeks? or is an unfed stomach after six or eight weeks incompetent to resume its duties of digestion, if provided carefully with food and a small amount of necessary exercise? Certainly not. In cases of cataract, either congenital or of recent date, is the retina incapacitated to receive or appreciate the rays of light carefully introduced into the organ? Certainly not. Then, I say, if all this be true, what right have we to expect that a joint should present different pathological and physiological phenomena?

I think I have advanced facts enough to induce those gentlemen who entertain these opinions, as to scrofula being very constantly the cause of mischief in diseased joints, to admit that other causes, such as a chronic inflammatory condition, and slight local injury are by far the most frequent; and, further, that rest to healthy joints does not induce disease leading to anchylosis. Here I might say that, in teaching on this subject at Guy's Hospital during many years, I have taken occasion to point out to those whom I have had the honour of instructing

that the generally received impression as to scrofula being, as a rule, at the foundation of joint diseases is really not true. This was taught publicly at Guy's before the professional existence of those who now publish such views as new.

It is not stating too much to say that the diseases of joints are modified by age, in one or two respects especially. In the adult period of life we see disease of the individual articular structures, whether of synovial membrane, articular cartilage, or bone, and we observe that not only is the progress of the disease usually slow, but the progress of repair at that period is slow also. In children, however, we note a very quick implication, if we may so term it, of all the articular structures in disease, and quick destruction of the parts, and subsequently very speedy repair. In young children this progress is very rapid in acute disease. Here I have the outline of a cast of an anchylosed knee-joint. It does not perhaps represent a specimen of perfect surgery, but it indicates the rapidity of repair in a young person. The boy was three and a half years old, when he fell from a window, and damaged his knee. The injury led to suppuration within the joint, and enormous swelling around it; absorption of all the true articular structures, and ultimately to complete bony anchylosis. The whole of this was accomplished in a very few months.

But I advance this case in reference to another and very important point. It is a very common thing for surgeons to conclude that a joint is irreparably damaged when they hear or feel the articular ends of the bones grating upon each other. Now, I had a good opportunity of testing the value of that point in this child when he was very ill, and the joint was very much swollen and suppuration going on it. My dresser said to me, "When dressing this leg, I can hear and feel the bones grating upon each other:" and he rather looked upon this symptom as fatal to any probability of the repair of the joint. I remarked to him, "Before we amputate this limb we will look into the interior of the joint." I made a free incision into the joint, on its inner side, and washed out all the purulent fluid; and then I saw the dense articular laminæ of bone still upon the femur and upon the tibia, and on rubbing them together, the harsh grating sound was produced. The internal soft parts of the joint were all destroyed. I saw that the articular laminæ on the bones presented a worm-eaten, or minutely cribriform, appearance, indicating that interstitial absorption of the laminæ was going on; and I came to the conclusion that it would be completely absorbed. I therefore secured the bones in as easy and as accurate apposition as I could. I wished to divide the tendons of the flexors, but it was determined by the father that as the child was so ill he would not permit him

to be touched any more in the way of operation; therefore we did the best we could with mechanical appliances to prevent flexion of the knee-joint, and ultimately the boy got well, and can now walk a mile or a mile and a half with facility. In this case I touched the interior of the joint with my finger, and I saw distinctly what was the cause of the grating sensation when the surfaces were moved upon each other. It arose clearly from the persistence, for a time, of the articular laminæ between the cancellated structure of the bones and the articular cartilage. You may observe here the articular laminæ interposed between the articular cartilage and the interior of the bone. It is, as we all know, a very dense, compact structure; and it is intelligible how it occurs that when these surfaces were brought together they would create the hard rubbing, grating sensation which we so frequently hear and feel on examining diseased joints.

As another practical application of this point, I may say that the fact of this grating sensation sometimes determines in the minds of surgeons the propriety of excision or amputation. Now it should not be overlooked that there must be a period in every joint disease which is to be cured by anchylosis when this grating sensation is to be experienced, and that is before the articular lamina is actually removed by absorption. When the articular lamina is removed, consolidation can take place, but just anterior to that period it is plain that the friction or rubbing of two layers of compact bone upon each other may produce a rough grating, and might lead unjustly to the conclusion, that those portions of the bone which ought to be in a healthy condition in order to secure subsequent anchylosis, are irreparably diseased. I have repeatedly heard and felt this grating noise in the fingers, ankle, hip, and other articulations, and yet the patient's joints have done well by anchylosis. This practical point appeared to me to be well worthy of a passing remark, especially as I had met with an opportunity of having the explanation of the facts and the symptoms actually demonstrated.

I purpose placing before you this fact, that diseases of the joints in children follow a peculiar course, and not perfectly in correspondence with that which obtains with respect to adults. In adults the individual structures of a joint may be diseased, and each may present its own local indications, or special local symptoms. Thus we may meet with isolated inflammation of the synovial membranes or ligaments, inflammation and deterioration of the articular cartilage, or a disease of the articular ends of the bones in the adult. Now, although these numerous structures are at all periods of life necessarily continuous with each other and closely allied in function, yet it is at the adult

period—after the completion of their cognate and harmonious development—that each separate structure seems to have acquired, and thenceforward to manifest both in health and disease, a structural independence, which gives a character of individuality and isolation to the diseases of the different structures of the joint.

In children all the structures of the joint must be formed, built up, and nourished in concert and in relation due to each other, under the excitation of extreme vital energy or epigenesis. There must be a great and intimate sympathy existing between the different parts of a joint during childhood, or during the period of growth, through the medium of an organic or vital power impressed upon those parts by nature. It is this formative or constructive power affixed by nature mutually to the different articular structures which engenders in their pathological conditions a tendency to diffuse disease contemporaneously in all the articular structures. Hence we see in our practice the quick propagation of inflammation from one articular structure to another, and a rapidity of implication of the various structures of the joint in childhood and youth which we do not observe at a later period of life.

It is true, I believe, that in childhood the separate and distinct disease of the articular structures can seldom be recognised with any useful precision during life. In cases of inflammatory condition the results of severe local injury, or of slight injury with strongly-developed constitutional tendencies, all the various structures (including the bone, ligaments, cartilage, and synovial membrane) tributary to the formation of the joint, become at this period of childhood soon more or less involved. It is, therefore, to my mind—and this is no new idea, for I have taught it publicly these last fifteen years or more—an unsubstantiated refinement in most cases of joint disease in childhood to attempt to depict the symptoms indicating distinct or separate pathological states of the individual structures composing a joint. It is certainly not in accordance with clinical experience, and surely it is not a sound basis upon which to fix and determine the plan of treatment.

This active principle of epigenesis and pathogenesis is not peculiar to the joints alone in children; it is the great feature, it is the pathological type, which this young period of life constantly displays in other parts of the body. Some of those gentlemen whom I now address know better than myself, and I take it upon the statement of those in whom I have confidence, than in adults you meet with pneumonia as a separate disease; you may see pleurisy as a separate disease, or bronchitis as a separate disease, each recognised by distinct symptoms, and treated in reference to the structural implication. But not so

in childhood; at that period of life you scarcely ever meet with pleurisy, pneumonia, and bronchitis as distinct inflammations. They all appear together, or there is a general and rapid implication of all these structures nearly at the same time.

So it is in diseases of the brain. It is a common thing to see disease of the membranes or disease of individual parts of the brain in the adult; yet it is rare to see these in the same distinct and isolated manner during childhood. So, as I remarked before, with regard to the larynx. In disease of the larynx in children all the soft parts become equally involved; whilst in adult life, when the laryngeal structures seem to have acquired a normal independence, which they had not previously, they possess also the pathological tendency towards the same kind and degree of independence.

Thus, I think, we mark by analogy a feature of high physiological and pathological importance, and very suggestive as a guide to treatment in practice—viz., the difference between the relative progress and implication of the various structures of diseased joints in childhood and in manhood, showing that in children vigour and rapidity as to the diffusion and progress of inflammatory conditions, as well as rapidity of repair, stand in very strong and distinct antagonism to the like diseased conditions (in all other respects alike) which may attack the same structures, but at a more advanced period of life.—*Lancet, Nov.* 16, 1861, *p.* 467.

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## 54.—ON DIAGNOSIS OF DISEASE OF THE HIP-JOINT.

By John Hilton, Esq., F.R.S., Surgeon to Guy's Hospital.

An error often committed is one which we have inherited from a previous generation of surgeons, and the entail of which I should like to see cut off. It was, and is now in some places, the disposition of surgeons to require that the patient suffering from hip-joint disease should manifest those marked symptoms which are deemed to be characteristic of hip disease, such as the shortening or lengthening of the limb, a fulness or flatness over the gluteal region, want of symmetry in the subgluteal folds, pain at the inner side of the knee, greatly disturbed health, and considerable lameness. Now the very fact of its being the opinion of some surgeons that shortening of the limb is characteristic of the disease, and of others, that lengthening of the limb is characteristic of it; of some, that there should be a want of symmetry in the gluteal region, and of others, that the symmetry is not necessarily altered—all this, I think, is a satisfactory proof that those symptoms may be wide of direct and positive indications. As far as I have been able to judge, how-

ever, early lengthening or shortening of the limb is almost always the result of inclination of the pelvis. I have taken great care and trouble to determine this point in my own mind, by carefully measuring and comparing the two limbs, and I do not know that it has ever fallen to my lot to see a case of well-marked uncomplicated hip-joint disease, where there was a difference in the measurement, in which the lengthening or shortening did not depend upon the inclination of the pelvis. I am not speaking of those cases of advanced disease about the hip-joint, nor of cases of dislocation from disease. These highly-characteristic symptoms which are put prominently forward as indicating disease of the hip-joint, or morbus coxarius, are not the early symptoms of hip-joint disease. When we see such symptoms, we may be sure that the disease in the joint has made a considerable progress. Now it seems to me that we should search for the local symptoms which precede the period referred to, for when these symptoms stand out so prominently and distinctly as to be recognizable by anybody, the local mischief must be great, and there can be then but little professional credit in "making out" the cause of the symptoms. It is highly important that the surgeon should recognise the diseased condition of the joint previous to that period, for that is the time when the most beneficial effects will be consequent upon a steady and long-pursued plan of treatment by rest.

If we succeed in diagnosing disease of the hip-joint early, I am quite confident that it will not fall to the lot of surgeons to see those sad and sometimes hideous cases which we so frequently observe, especially in hospital, and sometimes in private practice. It is, I think, a most condemnatory fault for surgeons to assume that there is nothing wrong in the hip-joint, unless some of those very conspicuous symptoms be present. The all-important point is the early recognition of the first deviation from a healthy state; and I should anxiously urge upon you, that even a suspected case of disease justifies a plan of treatment by rest, which, in my belief, would, in the majority of such doubtful cases, be the means of preventing the occurrence of the more formidable symptoms; and I would venture to affirm, that even if the more advanced and more formidable symptoms be displayed, still the case may be amenable to the influence of rest, and I hope to prove this by illustrative cases.

Referring to this hip-joint disease in children, let me say, it will be especially important for the surgeon to bear in mind that the acetabulum in a child is very shallow compared with that of an adult, and that it thus offers greater facilities for displacement; and I apprehend this may be the reason why dislocation

of the thigh-bone occurs so frequently in cases of hip-joint disease at an early period of life. I do not know that that is the only element which determines this point, but I think it may be considered an influential one. I shall not dwell upon the anatomy of the hip-joint, except to remind you that its muscles perform their functions in groups, that each group has a trunk nerve of its own, and that each nerve contributes a branch to the hip-joint itself. You see a branch of the anterior crural nerve passing to the hip-joint; a branch of the obturator going to the capsular ligament, and to the ligamentum teres; and here is a branch from the sciatic and pudic nerves, the same nerve that supplies the gemelli, the quadratus femoris, and the obturator internus, proceeding to the posterior aspect of the hip-joint. This anatomy should be borne in mind, because it explains how it happens that the remote and sympathetic pains associated with an inflammatory condition or chronic disease of the hip-joint are not always found at the same part of the limb. We all know very well that one of the earliest symptoms, in some cases of hip-joint disease, is remote from the actual seat of mischief—namely, within the knee, or on the inner side of the knee-joint; and we are familiar with the explanation of it—namely, that the obturator nerve, which contributes a branch to the ligamentum teres, extends a branch to the interior of the knee-joint, to the inner side of it, and sometimes lower down than that. The inflammation or a diseased condition of this ligament necessarily involves the little branch of the obturator nerve, and a sympathetic pain is produced at the other end of the same nerve, on the inner side of the knee or within the joint. As it is frequently with the obturator, it ought to be sometimes with respect to the other nerves of the hip-joint; but the frequency of this knee-pain, whether within the knee-joint or on its inner side, indicates the ligamentum teres to be the most common seat of early disease. We observe this same sympathetic pain in old persons, who may or may not have had a slight injury to the hip, but in whom the ligamentum teres softens down and disappears. Such persons often complain of severe pain within or on the inner side of the knee-joint. Some years ago I saw a case in which, after injury to the hip, this symptom of pain in the knee-joint was well and early marked. Afterwards the limb was slightly shortened, and foot everted, imitating the reputed symptoms of fractured neck of the thigh-bone. I subsequently examined this patient's hip-joint, and found that the injury was confined to the ligamentum teres.

Now, suppose that the anterior part of the capsular ligament (which receives a branch from the anterior crural) is inflamed, you will then see, applying the same law, how it may happen

that the patient with a diseased hip-joint may have pain on the outer side of the knee, or in front of the knee, or on the inner side of the ankle, because the anterior crural nerve sends branches to all those particular spots. Or if the inflammation or injury begins at the posterior part of the capsular ligament, which receives a branch or branches from the great sciatic nerve, then the patient may have a sympathetic pain actually at the heel or in the foot. I repeat these remarks in reference to the nervous supply, because an impression I think is abroad that the sympathetic pain of hip-joint disease is always on the inner side of the knee-joint, and that this local symptom is essential to a correct diagnosis. This, it seems to me, is not true. I admit its greater frequency, because, as I have already intimated, the ligamentum teres is perhaps the part where hip-joint disease actually begins most commonly, and that corresponds with the increased frequency of the sympathetic pain on the inner side of or within the knee. To put this point more strongly: it sometimes happens in hip-joint disease that there is no pain in the knee-joint at all (I have seen several such cases); this local pain therefore must be considered as a fortuitous, not a constant, symptom, and to be relied upon as diagnostic or indicative of diseased hip-joint.

We ought further to bear in mind that the hip-joint lies very deep, and that therefore one of the earliest symptoms of an inflammatory condition—namely, a sense of heat in the part, is not likely to be recognised early in the disease except by a careful manipulation. There is no local symptom which characterizes the inflammatory condition of a hip-joint so certainly as the increase of temperature in and over the part inflamed. There is one of the symptoms on which every surgeon may positively rely when examining a suspected disease of any joint, provided he is able to make accurate manual examination of it, in reference to the existence or non-existence of an inflammatory condition; and when this local symptom of increased heat exists, it is absolutely satisfactory. But you will observe it is one of the symptoms which you may not be able to reach in a very early stage of hip-joint disease, because the joint which is the seat of the inflammatory heat lies so deeply, and is covered at some parts by such a large mass of soft structure, that it is difficult for the hand to appreciate an increased temperature on the surface, but if, with the other symptoms of lameness and tenderness to which I will presently allude, you find an increased heat in the neighbourhood of the hip-joint, you may be sure that there exists a subjacent inflammatory condition.

Here, then, we see two sources of fallacy in diagnosis of hip-

disease which have existed: one as to the position of the sympathetic pains, and the other as to the non-existence of heat. If we say that the sympathetic pain is always on the inner side of, or within, the knee, and we are called to a case where it does not exist, of course it excludes from our consideration hip-joint disease. Or if we say that every inflamed joint is marked by an increase of heat, and we are called to a case where this does not exist (but I think it is very rarely absent) of course that again would exclude hip-joint disease from our consideration.

There is another source of difficulty in diagnosis, which time will not allow me to dwell upon—namely, cerebral or spinal marrow disease, which may induce or cause some of the physical signs of hip-joint disease.

[Mr. Hilton observes that it frequently happens, that the hip-joint, when diseased, is not examined in the same exact, direct, and methodical manner employed in the examination of other joints. Many habitually depend upon or place too much reliance on what may be called the outlying symptoms.]

If we see a child with a slight degree of limping or lameness in walking, that must depend upon something. If a child is suffering from a slight degree of lameness in walking, and we recognise no indication of an inflammatory state by the increase of heat in the ankle or the knee-joint or the foot, and no pain at all on isolated or definite pressure by the hand at either of these parts, we may be certain that the mischief is not there, and we may be pretty confident that it will be most probably found at one of the pelvic joints, or in the immediate neighbourhood of the hip-joint, either within the articulation itself, or at the epiphyses of the bones; and possibly, on placing the hand attentively upon these different parts, the precise seat of the mischief may be detected by a more or less increase of temperature at that spot, and this symptom is usually, and more especially, manifested towards evening, and after walking exercise. This latter point may be deemed by some unworthy of notice; but it is one which we ought not to forget—that a slight inflammatory condition may manifest itself by local heat in the evening, after the exercise of the day, but by the rest of a few hours during the night it may have almost entirely disappeared in the morning. In hip-joint disease the femur is slightly bent upon the abdomen and somewhat adducted, and this occurs from the combined action of the flexors and adductors, which compels the thigh-bone to follow the mean direction of the two muscular forces. This is a constant law to which I have already alluded—that when a joint is inflamed, the moveable part of it is obedient to the more powerful muscular action. If, then, you see

a child that limps a little in walking, the femur somewhat bent upon the abdomen, and the toe a little pointed, with inability to bear the whole weight of the body upon the limb, and when you make a little pressure over or upon the trochanter major, excessive or moderate pain is felt, as compared with the result of a like pressure upon the corresponding parts on the opposite side; if in association with these signs there be pain on pressure upon the front of the hip-joint, and pain in or near the hip-joint when the foot is struck upon its sole, and in addition to these local symptoms there be a slight degree of febrile excitement towards night, a little restlessness during the night, with occasional starting of the limbs, the suspected limb being more flexed and more adducted during sleep, (an almost constant occurrence,) then, I say, you may be sure that these symptoms are indicative of something wrong at or near the hip-joint itself. It will be remembered that at the early period of life to which I am now alluding, the bones forming the joint are composed of several parts. The trochanter major is an epiphysis; so is the trochanter minor; so likewise is the head of the femur an epiphysis, having a separate circulation, and joined to the neck of the femur by a temporary cartilage.

Now, to revert to hip-joint disease symptoms. If a patient presents such local and general symptoms as those to which I have alluded, it is hardly worth while to go into the question as to what tissue is involved in the mischief. That to my mind is a pathological refinement which is of no advantage whatever in the treatment of the case; and I think it is beyond the professional acumen of any man to be able to tell decidedly, at that period of childhood, whether the disease be between the neck of the bone and its epiphysis, the head, or whether it be in the ligamentum teres, or upon the surface of the head of the bone, or upon the floor of the acetabulum, which at that period is divided into three segments, indicating the separate contributions of those three individual parts—pubes, ischium, and ilium.

A little child, however, suffering from such so-called obscure or uncertain symptoms of hip disease, is likely to suffer from a misinterpretation of the symptoms, on the supposition that they may be caused by teething, or perhaps rheumatism; and these, I may say, are very common professional phantoms with the surgeon when considering such a case, so that all the attention is given to the innocent teeth and gums, which are scarified and punished unfairly for sins which do not belong to them, whilst the hip-joint symptoms are allowed to continue, or are left to themselves, and thus to constitute what may be a fatal mistake. The other day I thought I would call and speak to Mr. Thos. Bell, as to what he had observed in his large experi-

ence on this matter, and his opinion coincided with my own views as to this misplaced association of teething and hip disease. He added, "I wish you would also intimate that a very great deal of mischief is often done to the evolution of teeth by scarifying the gums too deeply." And it is obvious that it must be so. If the gums are scarified deeply, the rudimentary apparatus, which determines the development of the teeth either in their direction or integrity, must be very much interfered with by a reckless or badly-directed incision upon the gums.

I should have no hesitation, in a case presenting the hip-joint symptoms to which I have referred, in expressing my conviction that the femur or acetabulum has suffered local injury in some of its epiphyses, or that the soft parts of the hip-joint itself are inflamed; and that the essential, and probably the only required remedy would be sufficient mechanical rest secured to the patient by the recumbent position during several weeks. By persistent rest in such cases, you will surely anticipate the next series of more formidable symptoms which are said to be the characteristics of hip-joint disease. In cases presenting all these milder or less striking symptoms of hip-joint disease, I admit that it requires a strong determination and a strong conviction on the part of the surgeon to say to the parents, "This child has disease about the hip-joint, or symptoms which lead to the suspicion that the hip-joint is diseased, and it is necessary that he should lie down for two or three months, with a splint upon the limb, to keep the joint quiet." But I know from experience, that we may act upon it with great and not unmerited confidence. It is a sound discretion, and it is the safest and best plan we can, under such circumstances, pursue. I feel strongly on this matter, because I am confident that if these early symptoms are properly made use of, and the surgeon will not wait for the next series, (said to be the characteristic symptoms,) which will be too conspicuous to everybody, he will not be troubled with long-continued cases of hip disease, nor will he meet with those old cases of deformed and displaced hip-joints as a result of unmitigated disease, to which I have before alluded.

Suppose that time should show that you are wrong in your opinion regarding the disease in an obscure case, rest during one, two, or even three months, is not a very serious matter to the child. Assuredly, if you have given the proper advice, after the child has been lying down about a fortnight, many of those constitutional, and nearly all the local, disturbances which formed the early symptoms will have become much mitigated, and it will be then apparent that you have hit upon the right

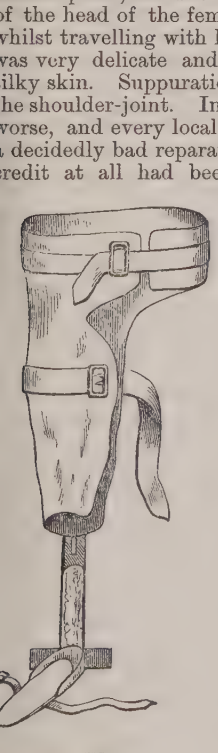
treatment of the case, if not the precise pathological anatomy or the exact locality of the disease.

I am anxious to inculcate the importance of recognising, or of diagnosing, a case of disease of the hip-joint or its neighbourhood at a period before the full manifestation of those symptoms which are spoken of and traced in books as the characteristic symptoms of morbus coxarius. I must admit it is still the opinion of some surgeons that inflammation or irritative disease of the hip-joint is sometimes associated with, or induced by unhealthy teething. I cannot say that it is not so, but I think it must be a comparatively rare occurrence, for it certainly has not fallen to my lot to see more than one or two cases which could give any legitimate support to such an interpretation. On the other hand, I certainly have seen a great number of cases in which teething has been said to be the cause of hip-joint symptoms, but has turned out to have nothing to do with them, and a great deal of time has been lost, and the patient has been placed in danger by the delay.

I wish now to detail shortly the case of a patient who had an incipient disease of the hip-joint, and who did remarkably well, I believe, in consequence of the recognition of the early symptoms to which I have directed your attention. It was the case of a boy whom I saw in my private practice. While dealing with this subject of hip-joint disease, I find myself obliged to refer to cases in private practice, because we rarely see these early cases in the hospitals. In truth, such cases are scarcely ever seen in public institutions until the symptoms of hip-joint disease have become exceedingly conspicuous and advancing towards suppuration; and I am trying to rivet attention upon the state of the patient antecedent to such severe conditions, for no doubt can be entertained that the earlier the cases are rightly interpreted, the fairer is the chance of recovery for the patient.

*Case of disease in the shoulder-joint; the joint not kept at rest and the joint destroyed; hip-joint in the same patient cured by "rest."*—This young gentleman was born in April, 1846. His mother was phthisical; she had cavities in one or both lungs when the child was begotten. In 1847, the child had inflammation or a diseased condition of the left shoulder-joint. The father took him to hospital surgeons who have now passed away, and who did not recognise this as simply an inflammatory condition, the probable effects of local injury, nor as a case to be cured by "rest." No, it was a scrofulous joint, and the shoulder was poulticed and the general health well attended to, as he had every possible advantage of good domestic care and change of air; but the arm, slightly supported by a hand-

kerchief around his neck, was allowed to be used as a child would use it, without any positive restraint, except that suggested by pain. It ended in extensive suppuration, and in complete disorganisation of the shoulder-joint. The child became in very bad health, and there was a fair prospect of his dying from suppuration; and moreover, there appeared little or no chance of a good result for him, as he was thought to have inherited from his mother this scrofulous or fatal tubercular taint. I saw this patient professionally in 1848, and he then had all the symptoms of incipient hip disease to which I have alluded, and Mr. Key, in consultation, confirmed this opinion as to there being distinct hip-joint disease. The prospect for the patient was not good. The mother was dying, and did die, of consumption, and she had also hip-joint disease, with dislocation of the head of the femur, as the result of a very slight accident whilst travelling with her husband in North Wales. The child was very delicate and unhealthy-looking, with a thin, fine, silky skin. Suppuration was then proceeding abundantly from the shoulder-joint. In fact his health was going on from bad to worse, and every local symptom in the shoulder-joint indicated a decidedly bad reparative power. But be it remembered, no credit at all had been awarded to nature as regarded the shoulder; not a single chance had been given to her to repair the injury; no useful kind of mechanical rest had been prescribed; and the disease in the shoulder had been allowed to take its own course.



When I saw the patient, in 1848, he had disease of the left hip-joint. I had him placed upon a well-stuffed hair mattress, with a leathern splint upon his leg, thigh, and pelvis, like that here depicted; and I kept him lying there there uninterruptedly for the space of six months,—from September, 1848, to March 29th, 1849,—with the left arm (the side diseased) fixed in a sling, but giving him permission to use the right arm as freely as he might wish, in order to amuse himself with his various playthings. The parents were constantly saying to me, "Let him get up; lying in bed will make him so weak, and his general health will suffer," and I as constantly replying, "No, no, his health is improving," and insisting upon the

child remaining absolutely quiet for at least six months. The child was then allowed to get up, and to be carried about out of doors, but the splint was not taken off until the end of August, eleven months from the time it was first applied. At that time the whole of the hip-joint symptoms had entirely disappeared, the general health was good, and the shoulder was also greatly improved and approaching cure by anchylosis, yet discharging now and then little fragments of cancellated bone. The hip-joint was movable, painless, and would bear the weight of the body in standing without inconvenience; so that in truth, in the same person, with the same constitution, the shoulder-joint had been destroyed and the hip-joint was saved.

What was the cause of the difference in the actual condition of the two joints in this case? Just this, I apprehend: that with the shoulder, Nature never had a chance of curing it by rest; and with the hip disease she had every opportunity offered to her, and she did not fail to make good use of it. With one joint the treatment adopted was ineffectual, and in the other perfectly successful. In 1850 the shoulder was still suppurating, still discharging a little thin pus and very minute portions of bone, and there was a large open ulcer at the posterior part of the joint. In 1854 I had a leathern splint placed upon his shoulder and upper arm, which he wore for two years, and at the expiration of that time the joint had got perfectly well. I saw the patient early in June, 1858, and the hip-joint was then in a perfect condition; the left shoulder joint was completely anchylosed, and the anchylosis, with its remote effects, showed themselves in this way: the humerus and scapula moved rigidly together, and, in addition to the rigidity of that joint, the clavicle was short as compared with the other side, and the chest on the left or shoulder-disease side was not so much developed as on the other side. Time will not allow me to dwell on the other details; but I must express my conviction that if the surgeon who first saw this child's shoulder had acted upon the idea that it was a diseased joint from simple inflammation, the result probably of injury, and had given Nature credit for being very active in the reparative as well as in the formative process at that period of life, and had kept the shoulder perfectly quiet for some weeks, the shoulder-joint would have been saved as satisfactorily as was the hip-joint.

To disencumber this case of its details, it is just this: Here was a child who had manifested by his shoulder-joint a scrofulous taint, if you like to call it so (although I am not a believer in scrofula to the extent that many people are), whose mother died scrofulous and from pulmonary tubercular phthisis and hip disease; yet by giving this child's hip-joint rest for a long

time, in spite of these constitutional and inherited difficulties, *he perfectly recovers* from this affection of the hip-joint, because it was recognised early enough to enable Nature to repair the injury which the child had sustained.

Notwithstanding disease of the hip-joint may have advanced to that period when the symptoms of hip disease are conspicuously distinct, and notwithstanding a very bad constitution, and the destruction of the soft parts of the joint, patients may get perfectly well by rest, with an anchylosed hip-joint. This would appear at once to negative the idea of there being necessarily a scrofulous condition of the bones in such cases.

The notes of the next case to which I shall allude are also taken from my private practice.

*Case of hip-joint disease of one year's duration cured in seven months by rest.*—In January, 1855, the patient, (a little girl between four and five years old), lame, and in great pain, was taken to a surgeon, who pronounced that she had hip-joint disease, and that he regarded it as scrofulous. She was under his professional care about eight months. He directed her to be taken to the sea-side, to have medicine, and to move about or take exercise, that her general health might be improved, thus hoping to cure the case by invigorating the constitution; but no direct rest was given to the hip-joint. The local and general disturbance and distress increased so as to become excessively severe. In December, 1855, eleven or twelve months after the appearance of the first symptom, she was brought to my house. She could not bear the pain of being very gently and carefully carried in the arms of her mother. The child was much wasted, and a picture of really extreme bodily distress, screaming with pain nearly all the time she was with me; and her mother informed me that she had had scarcely any sleep during many weeks from the pain in the hip and the outer side of the knee, these pains being especially severe at night. The thigh was flexed upon the abdomen, adducted, and the knee turned inwards, evincing a disposition of the head of the femur to be dislocated backwards; there were also fulness and rotundity at the back of the joint. The slightest pressure upon the trochanter major or upon the sole of the foot, for the purpose of forcing the head of the femur into the acetabulum, caused fearful agony. There was marked disposition of the head of the bone to be displaced backwards, (always a serious complication,) and the distinct fluctuation of an abscess below Poupart's ligament to the outer side of the hip-joint. The patient was taken home with great care, and by my direction Mr. H. Bigg the same evening went to the house, and moulded this leathern splint, or case, upon the pelvis and upon the hip, with an extension to the foot for the purpose of keeping the hip-joint and the whole leg at

rest. Great pain and distress were experienced by the patient whilst the limb was being straightened, but there was no alternative, and it was done. In adapting a splint to a case of hip-joint disease, it is important not only to prevent any movement of the joint, but also to ensure easy persistent contact between the articular surfaces without pressure, so as to facilitate bony union, supposing the soft parts to be destroyed; or if the soft parts be simply inflamed and swollen, then to prevent undue pressure of the soft parts, mutually inflamed, upon each other. Another object in this case was to prevent rotation of the limb either inwards or outwards, because it is obvious that if no such rotation be permitted, no dislocation can occur. All the requirements were carried out in this patient by the splint you see before you. It was accurately adapted, and answered remarkably well. You will observe that a sliding footpiece is attached, so as not to interfere with the growth or elongation of the limb. Children grow very rapidly, especially so if well-fed, when in the recumbent and supine position, and if the footpiece of the splint be fixed, there will be a constant contention, if we may so term it, between the restraint on the part of the splint and the changes incident to growth; so that the footpiece should be allowed to elongate itself as the child grows. The splint is also provided with a transverse portion under the footpiece, which prevents the possibility of any rotation either inwards or outwards. The patient was placed on her back upon a well-stuffed hair-mattress bed, and this splint was kept on uninterruptedly, or nearly so, during seven months. It was taken off three or four times by myself with care, merely for the purpose of examining the progress of the cure, and of facilitating personal cleanliness. During the latter portion of the time she was taken out of doors, with the leathern case, or splint, on, and lying horizontally upon a little wheeled carriage, with easy springs. The medical treatment consisted simply of opium, in large doses at first to secure sleep, and one-sixteenth of a grain of bichloride of mercury twice a day, with sarsaparilla, during about a couple of months. No seton, no issue, no tartar emetic ointment, no croton oil liniments, nothing of the kind. The general health and appetite improved rapidly after the first month of confinement to bed. At the expiration of the seven months, all pain, tenderness, and constitutional disturbance having disappeared, she was soon allowed to take gentle and well-watched walking exercise, without harm. The abscess in the thigh gradually subsided, and was finally absorbed. I saw the patient again in about sixteen or eighteen months from the time she began to take independent exercise. She walked into my room quite comfortably, well in health, but rather flat-footed. She could then walk two miles without any difficulty

or pain. The muscles of the thigh and leg were increasing in size almost weekly. There was a slight limp in the walk, the foot very little everted, and there was, perhaps, from about a quarter to half an inch shortening of that limb as compared with the other; there was no abscess to be felt, no fluctuation detectable anywhere, and the bony anchylosis was perfect. For the purpose of testing this latter point of bony union, I placed the child recumbent upon a couch, and pressing downwards upon the pelvis, endeavoured to flex the thigh-bone upon the pelvis, but I could not carry the thigh-bone towards the abdomen without lifting the pelvis at the same time; the other lower limb was perfectly natural in all its movements. I might suggest that the slight shortness of the diseased limb was due to the arrest of growth on that side while the other side was growing. This case, then, proves that although hip-joint disease may have existed uncontrolled during nearly a twelvemonth, yet that by rest alone the case is perfectly curable, with a stiff joint, which may be styled the best possible result in such a condition of joint; and the case shows also, I think, that there was no scrofulous condition, no tuberculous state of bones, for I cannot believe that if those bones had been scrofulous, we should have obtained such a rapid and perfect anchylosis, or bony union. I had intended making some remarks on this case in reference to the absorption of abscesses, but the time will not permit.—*Lancet, Nov.* 23, *Dec.* 7 *and* 14, 1861, *pp.* 491, 539, 563.

## 55.—ON THE STRAIGHTENING OF CONTRACTED JOINTS.

By James Paget, Esq., Surgeon to St. Bartholomew's Hospital.

[The following are notes taken of a clinical lecture delivered at the Hospital. Mr. Paget adverted to the practice of straightening stiffened joints, the patient being under the influence of chloroform.]

There were, he said, two classes of cases. In one this method was adopted to rectify deformity, in the other to prevent it. In the latter when the disease was still in progress, and in the former when the effects only remained. We should, however, be careful not to attempt this in cases in which there are signs of acute inflammation, nor in cases in which the patients had been found liable to recurring attacks of inflammation. In cases, also, in which the joint contains fluid, or in which the skin is firmly bound down over it, this plan should not be tried. In those in which active disease has terminated, there might be distinguished two kinds of cases. First, those on which stiffness depends on effusion and adhesion of the ligaments and ten-

dons external to the synovial membrane. Of this a good example was then in Darker Ward,—one in which the success of the treatment was well shown. The other and more common class of cases was those in which changes had taken place in the true joint itself. In these cases it was true that gradual extension would obtain the same end as the forcible extension under chloroform; but the great length of time taken up, (months, or even years,) was a great drawback to it.

The cases in which forcible extension should not be tried, Mr. Paget recapitulated, were:—1. Those in which the inflammation was apt to recur. 2. When the change had been of very long standing. 3. When there was a strongly-marked diathesis (strumous, syphilitic, &c.) 4. When the skin was involved and adherent over the joint—soundness of skin being an essential condition.

There were other cases in which from rigid muscles a joint would be contracted,—there being no affection of the joint itself. This occurred after a blow on a joint, which, however, did not produce any inflammation, or in cases where the bone near a joint was fractured, without however, producing any disease of it. In these cases, under chloroform, the contractions were reducible almost by simple extension, no force being required.—*Med. Times and Gazette, Feb.* 15, 1862, *p.* 157.

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## 56.—TREATMENT OF "HOUSEMAID'S KNEE."

By Richard W. Martyn, Esq., Martock.

[Mr. Skey, in a lecture lately given at St. Bartholomew's, recommended the treating of these cases by passing a seton through the tumour, and states that he has cured many hundred patients in that manner. Mr. Martyn says:]

For the last forty years I have never met with a case that I could not cure in the simplest manner, without the least pain, confinenent, or danger, the patient doing her usual work, except kneeling. I merely apply a simple plaister and bandage in the manner Scott recommends. I have always found a fortnight sufficient for the cure; and, perhaps, two applications will be necessary.

The following is the plaister:—Cut a piece of leather of sufficient size to cover the knee above and below the joint, and to nearly meet behind; spread this with emplastrum plumbi. Cut some white curd soap into thin shavings, and about the same weight of emplastrum plumbi; add about a teaspoonful of olive oil. Melt together over a slow fire. Take half an ounce of muriate of ammonia (commonly called sal ammoniac); pound this in an earthenware mortar as fine as you can. Pour the melted

soap plaister into the middle of the plaister spread on leather so that it may cover the upper surface of the knee; let it be nearly an inch thick. Now while it is liquid and hot, mix into it the powdered muriate of ammonia, and apply it as warm as the patient can bear. Apply a roller *secundem artem.—British Med. Journal, Nov.* 23, 1861, *p.* 565.

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## 57.—ON A NOVEL AND EFFICIENT METHOD OF REDUCTION IN DISLOCATION OF THE SHOULDER-JOINT.

By Professor N. R. Smith.

After stating that the real difficulty in reducing dislocation of the shoulder is the production of immobility of the scapula, and that this is insufficiently provided for by several of the means in use, Dr. Smith describes the procedure which he has himself had recourse to for many years past.

"In effecting counter-extension, it is undoubtedly in most instances expedient to apply our resisting bands as directly as possible to the bone from which the other is dislocated. But the difficulty in this case is to effect it without defeating the object in the manner indicated above. On noticing the mechanical relations of the scapulæ with their apparatus of muscles to each other, it occurred to me to make counter-extension from the opposite wrist. Anteriorly the two acromion processes are bound together by an unyielding chain of bone and ligament. The two clavicles, the sternum, and the intraclavicular ligament, chiefly constitute this band of union. The fibrous, resistant ligaments in this chain are not capable of being stretched; and if traction be made from opposite wrists, the two acromion processes, thus tied together, are not capable of being drawn asunder to the extent of half an inch. Posteriorly, the continuity of resisting parts is almost as perfect. . . . . The object of counter-extension is to prevent the yielding of the scapula to the tractive force. Nothing does this so effectually as the *fixing of the opposite scapula* by counter-extension at the wrist. Not only is the scapula thus sustained but the spine is erected and prevented from yielding to the tractive force, and becoming carried to the injured side, as invariably happens when counter-extension is chiefly made from the axilla, as usual. . . . . In some of the cases in which I first employed this method, I directed simply traction from the two wrists, and I am not now confident that this is not the best method. I placed the patient in a chair, and directed two strong persons to make steady horizontal traction from the two wrists. As soon as the spasmodic resistance of the muscles

was overcome, the head of the bone was disengaged, and the muscles which help us in such cases suddenly lifted the head into its place. It will be observed that this means causes no appreciable pain, but rather relieves the suffering of the patient caused by the pressure of the head of the humerus. In cases in which, from unusual muscular development, or the age of the dislocation, much resistance is expected, I have modified the application of counter-extension thus: I place the patient on a chair, sitting a little on one side of it, so as to allow room on the side of the injury for the operator's foot. I then pass a piece of stout muslin, folded, around the chest and under the axilla of the injured side. The tails of this I carry horizontally to the opposite side—one in front, the other behind—and extending the arm horizontally, bandage them firmly to the wrist on the sound side, leaving the ends projecting, to be well secured to the wall, or other unyielding substance. I then pass an ordinary roller over the top of the injured shoulder, and back and forth twice under the muslin band, to prevent its slipping down. Then I continue the same roller under the bottom of the chair and over the shoulder three or four times. This helps to give steadiness to the scapula, and especially prevents the involutary rising of the patient, or the tilting of the scapula upwards, when it is necessary to make the manipulation of which I am about to speak. I first apply a wet roller to the wrist of the injured side, and then attach a muslin extending band by the clove hitch. Next, I direct extension to be made by two persons, at first outwards and a little downwards, gradually raising the arms to the horizontal direction, and finally a little above it. The extension must be made gently and steadily, gradually increasing the force so as to not provoke the muscles to spasmodic resistance. As no pain is produced by the force thus employed, it may be continued for a considerable time. The muscles, which at first resist, become fatigued, and finally relaxed; and in a large majority of instances of recent luxation, the head will slip into place without resort to any manipulation. I would even continue this traction, where much resistance is encountered, for a quarter of an hour before modifying the force; but in case the object is not then effected, let the surgeon place his foot on the margin of the chair and his knee in the axilla. Then let the assistants raise their line of traction above the horizontal as much as possible, and continue it for a moment. The surgeon should then direct that the arm be, by a sudden movement, carried downwards, while, by extending his foot, he elevates the knee in the axilla. He aids the assistants in this by grasping the arm near the elbow and using it as a lever. If the first effort be not successful, he should repeat it. Sometimes I place on the knee a ball made by rolling up a bandage,

but it is not important. The surgeon can thrust his knee into the axilla, so as to avoid much pressure on its marginal muscles. I generally direct those who make the traction to sway the limb horizontally backward and forward, and, grasping it with my hands, at times I rotate it a little on its axis, thereby contributing to the disengagement of the head of the bone. . . . The supine position of the patient on a table is a very convenient arrangement in all dislocations of the shoulder, and is well calculated to promote the efficiency of the method which I recommend. I am not sure that it is not the very best, especially when chloroform is employed. . . . . I will here state that I have by this mode repeatedly reduced dislocation of the shoulder which was two months old, and once when three months had elapsed. In cases in which I expect great resistance I commonly employ chloroform. The effect of this agent must, however, be rendered very complete, for its incomplete use causes spastic rigidity of the muscles and defeats the object."—*British and Foreign Med. Chir. Review, Jan.* 1862, *p.* 257.

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## 58.—ON THE TREATMENT OF LATERAL CURVATURE OF THE SPINE.

By William Adams, Esq., Surgeon to the Royal Orthopædic and the Great Northern Hospitals.

A combination of lying down to the extent of four or six hours a-day, together with light gymnastic exercises, is the treatment best adapted to such cases at the commencement of the spinal affection, when curvature is threatened rather than positively formed; but if curvature has actually taken place, then mechanical support must be combined with the partial recumbency and light gymnastic exercises.

*The Constitutional Treatment* in these cases must be regarded as at least of equal importance with the local treatment, and every effort made to improve the general powers of the patient. For this purpose, I have found the free exhibition of the hypophosphite of lime, and preparations of iron the most useful. Generally I direct five grains of the lime to be dissolved in a wineglassful of water, to which ten drops of the tinct. ferri sesquich. may be added, and taken twice a-day, at, or directly after, meal times. In addition, also, I give half-an-ounce of cod-liver oil, to be taken twice a-day, an hour after meal times, and recommend the use of wine or beer, as the patient may prefer. The influence of soil and place of residence is also of the greatest importance, and, where practicable, I advise the removal from large towns, damp situations, and clay soils, to high and dry situations, on a chalk soil. The great improve-

ment in the general health and strength of delicate children and growing girls with spinal curvature, which I have seen follow a change of residence from such counties as Lincolnshire, Cornwall, Devonshire, &c., to high and dry situations on chalk hills or downs, has led me to recommend such a change of residence in these cases where practicable. To these measures we may also add the use of the cold bath where it can be borne, followed by frictions to the back, and free out-door exercise.

*The Local Treatment* of lateral curvature of the spine is that to which the attention of the profession has been generally—I might almost say exclusively—directed; and at different periods various methods, or so-called *systems of treatment*, have sprung into existence, through the advocacy of those who have specially devoted their attention to the treatment of this class of affections; and each *system* in its turn has more or less completely enjoyed the support of public opinion, and the sanction of the profession.

I have already enumerated the most important of these systems, or those which have received the greatest weight of authority, and will now again advert to them in reference to the anatomical and pathological principles upon which they are based, and examine how far these are compatible with the views which I have brought forward in reference to the anatomical construction and mechanism of motion of the spinal column, and the pathological conditions which I believe will be found to exist in every case of lateral curvature, however slight. We have, then :—

1st. The system of *complete recumbency.*
2nd. The system of *muscular exercises, or gymnastics.*
3rd. The system of *cutting the spinal muscles.*
4th. The system of *mechanical extension.*
5th. The system of *mechanical treatment by support and pressure*, applied by means of spinal instruments.

All these different systems, acting for the most part on principles diametrically opposed to each other, are reported to have been in every way successful and satisfactory in effecting the cure of lateral curvature of the spine; and the perusal of the various works or treatises in which these systems have been advocated, serves only to impress one with the conviction that lateral curvature of the spine has even at the present time no fixed pathology; and therefore no fixed principles of treatment have as yet been determined.

1st. The system of *complete recumbency*, by which patients used to be condemned to constant lying down for at least one or two years, and frequently for a much longer period, has had many advocates in this country; but its injurious effects

upon the general health, as well as its complete failure to cure the spinal curvature when severe, has led to its discontinuance as a system; and its admitted disadvantages have been so loudly proclaimed by the advocates of other systems, and more especially by those who profess to cure even severe cases of spinal curvature by means of spinal instruments, that the advantages which undoubtedly belong to recumbency when judiciously employed, and combined with other means, have been to a great extent lost to the public of late years, and the treatment of spinal curvature proportionably less successful than it might have been if the views taken of its pathology and treatment had been upon a more enlarged and liberal scale.

The great object of recumbency is to relieve the spine from the superincumbent weight of the head and upper extremities, which it is obviously unable to support when curved or even disposed to curvature; and as the immediate cause of curvature of the spine is undoubtedly mechanical in its nature and action, viz., the irregular distribution of the weight of the head and upper extremities, though this again may depend, as it generally does, upon a combination of local and constitutional causes, yet the immediate object is most completely effected by the patient assuming the recumbent position. All the mechanical conditions upon which lateral curvature so much depends are thus removed, and the patient, during recumbency, relies upon her constitutional strength and powers of development and growth, which are, in many instances, sufficient, during the period of youth, to lead to the complete reparation of such structural damage as the intervertebral cartilages and oblique articulating processes may have sustained when the curvature is slight and of recent formation. I regard lying down, therefore, during the period of active growth, as essentially a curative means in cases of spinal curvature, and whilst I reject it as a system to be relied upon exclusively in any class of cases, I recommend its adoption in every case during the period of growth, in conjunction with such other means as may be thought advisable; in some instances with gymnastic exercises, and in others with mechanical support, occasionally also in conjunction with both these methods of treatment; and here I would observe that there is no greater error than to suppose that these different methods, or so-called systems of treatment are essentially incompatible with each other. Their objects, it is true, are very different, yet both theory and practice teach us that in many instances they may be most advantageously combined for the benefit of the patient. As a general rule, I advise recumbency in proportion as the spinal curvature predominates in the

lumbar region, in which situation it must be admitted that mechanical support can be of little use; here there are no ribs against which pressure can be exerted, and no one will contend that the transverse processes are adapted to receive mechanical pressure.

With regard to the extent to which I recommend lying down, I would observe that in ordinary cases I advise recumbency at least during four or six hours a-day; and this can be borne with comfort and without any disadvantage to the general health, if the patient use the reclining chair.

The inclination of this chair can be varied to any angle from that of an upright chair to a horizontal couch, but the angle of 45°, or rather more, is that best adapted to long-continued recumbency for spinal cases. In this position the weight of the head and upper extremities is effectually removed from the spinal column; and the patient does not suffer any of the inconveniences, such as headache, indigestion, &c., so frequently attendant upon lying down on the *inclined plane*, or lying flat upon the floor, or upon boards, which formerly used to be recommended. The addition of arms and a reading desk to the chair adds materially to the comfort of the patient, and allows education in its more important branches to proceed without interruption. This chair has been made for me for several years by Mr. Ward of Leicester-square. Writing, drawing, and music must be diminished in the education of young ladies under treatment for spinal curvature, as the long continuance either of the sitting or standing positions is that which we have more especially to avoid.

2nd. *The system of muscular exercises, or gymnastics*, as a curative means in the treatment of lateral curvature of the spine, has been relied upon with more confidence by Continental than English Surgeons; and according to the statements made by the leading Professors of this system, lateral curvature is certainly cured when the deviation is slight, and as certainly arrested when more severe; hence it is assumed to be at least equal, if not superior, to other methods of treatment. The pathological idea upon which this system is based is that lateral curvature essentially depends upon muscular debility, and the argument therefore is—if muscular debility be the cause, will it not be desirable to strengthen the muscles by means of a proper system of gymnastic exercises, rather than apply mechanical support, which must, by superseding the necessity for muscular effort, tend to weaken the muscles to a corresponding extent? or than to adopt a system of lying down, which would still further debilitate both the system and the spinal muscles. The argument is logical and attractive enough both to the public and the Profession, who generally adopt the muscular-debility

theory of the production of lateral curvature; but there can be no doubt that this theory can only apply to a limited number of cases. I have already stated that certainly less than half of all the cases of lateral curvature which have passed under my observation, have been neither preceded nor accompanied by any muscular debility, and that even where muscular debility has existed, other causes, both constitutional and local, have also existed, and according to the views of the mode of production and general pathology of lateral curvature which I have adopted, appear to me to be of not less importance than the condition of muscular debility.

Let it be admitted, however, that in many cases an increase of muscular strength is desirable, and the question which naturally follows is—can this be so obtained as directly to cure, or to contribute to the cure of lateral curvature of the spine?—If in any case of lateral curvature, all the muscles of the spine could be at once raised to their maximum of power, the only effect could possibly be to arrest the curvature at that point, and we frequently see cases of moderate severity undergo spontaneous arrest where the general health and muscular power are improved, though I believe this only occurs when the mechanical conditions of the curvature—more especially the equality in length of the dorsal and lumbar curves—are favourable to such a result; but in such cases no advance is made towards straightening the crooked spine, which must be considered the main object of treatment. A general increase of muscular strength being thus considered useless as a curative means, it may be asked, Cannot we by special muscular exercises develope only the muscles which would tend to correct the spinal curvature? By the gymnastic professors it will doubtless be contended that we can, but I have no confidence in the curative effects of any system of special muscular exercises, whereby the muscles on one side of the spine are sought to be particularly developed. I believe such a result to be practically impossible for two reasons, 1st. The anatomical difficulty, arising from the number and complex arrangement of the spinal muscles, of stating precisely in any given case the exact muscles and portions of muscles, the increased power of which would act beneficially on the curvature. 2nd. The impossibility of strengthening these particular muscles and portions of muscles, if they could be selected, without at the same time strengthening other muscles the increased action of which would at least neutralize their effect.

Another, and I believe a fatal objection to the pretensions of the muscular exercise or gymnastic system is, that it rests upon the idea of free motion, or surface-play being allowed at the articulations of the vertebræ, and an absence of structural changes in the articular surfaces;—in fact upon the idea of the

anatomical analogy between the articulations of the vertebræ, and the moveable articulations of the extremities, and consequently upon the idea of an analogy in the pathological conditions attending the distortions of the spine and those of the limbs, whereas I have endeavoured to prove that there is a complete absence of any analogy between the vertebral articulations and the moveable articulations of the extremities; and that no curvature, however slight, can exist without structural changes affecting the intervertebral cartilages and the oblique articulating processes in a degree proportionate to the curvature.

The muscular exercise, or gymnastic system, must therefore be rejected as a system capable of curing lateral curvature of the spine; but nevertheless when used judiciously, and in conjunction with other means, in some cases of slight lateral curvature, associated with muscular debility, there can be no doubt of the great value of a well regulated system of gymnastic exercises. In cases of *weak spine* which threaten to pass into actual curvature, cases which I sometimes speak of as *threatened curvature*, occurring in girls from twelve to sixteen years of age, gymnastic exercises are invaluable, and in conjunction with the use of the reclining chair for about four hours a-day, may be confidently relied upon, as the best *preventive* means at our command, the general health at the same time being improved by such constitutional means as may appear to be indicated. In cases of slight curvature also, I employ gymnastics in combination with partial recumbency and mechanical support by the lightest form of spinal instrument, such as the Eagland belt, and now from long experience I am enabled to state that this combination of means contributes to a favourable termination much more certainly than the employment of either system alone. The gymnastic exercises which appear to me to be the best adapted for strengthening the spinal muscles equally on both sides are those used by means of the *hand-swing*, *the elastic chest expander*, *and the act of drawing up a weight from the ground*, which may be imitated by a short and strong cord of vulcanized india-rubber attached to the ground. This is the movement of the *top sawyer* at the saw-pit. More varied exercises may also be employed, but essentially these appear to me to be the most useful.

3rd. The system of *cutting the spinal muscles.* In direct opposition to the idea of muscular debility and the treatment by gymnastic exercises, we have the theory of M. Guérin, that lateral curvature of the spine is produced by the active or tonic contraction of some of the spinal muscles, in the same way that club-foot, wry-neck, and various contractions

of the limbs are known to be frequently caused; and upon this pathological idea M. Guérin has recommended, and for many years extensively adopted, the practice of dividing the spinal muscles. The operation, however, I am happy to say, has found but few advocates in France, and still fewer in England. I have already discussed at some length, and I hope have succeeded in showing, the fallacies upon which this theory is based. It is unnecessary, therefore, for me to say more in reference to the practice arising out of it, viz., the section of the spinal muscles, than that I entirely disapprove of the operation, and regard it essentially as an unsound and unscientific procedure; and that I do not believe there are any cases of lateral curvature in which such an operation can ever be called for.

4th. The system of *mechanical extension*. The idea of straightening a crooked spine by the process of stretching it, is of ancient date; and the system of mechanical extension, employed both in the erect and the recumbent positions, has been very generally adopted thoughout the continent, and is still in vogue to some extent. In England, also, the practice was in favour twenty years ago, but never so generally adopted as in France and Germany. I have never seen the *extension plan* in operation, but not long since I saw in a private establishment near Portman-square, several *extension couches*, and also a sort of hanging contrivance, by which people were drawn up by the head, off the ground, and allowed to remain suspended in the air for a certain time. I was informed, however, that these things were not used in the treatment at present adopted, which was essentially gymnastic. The couches were divided transversely in the centre, and the two halves could be separated by machinery when the patient was fixed on to it by straps, &c., the head and upper extremities being fixed to one half and the legs to the other. Our anatomical knowledge at the present time, and a momentary consideration of the series of adapted structural changes which we know takes place in all cases of confirmed lateral curvature, render it unnecessary for us to discuss any pretended merits assumed for the *mechanical extension* system.

5th. The system of *mechanical treatment* by means of spinal instruments. The idea of straightening a curved spine by means of mechanical contrivances fixed on the body, and constantly worn by the patient, without the necessity of lying down, and by what are described as *portable instruments*, acting on the same principle as we now adopt in straightening a bent knee-joint, for instance, is of modern invention, and may be described as the English orthopædic treatment of the present day, since it is the plan which has been advocated and adopted by the majority of the English orthopædic authorities during the last twenty years.

to the exclusion—and it may be feared injuriously—of all other methods of treatment.

The English public as well as the profession, had seen the very satisfactory condition of the treatment of lateral curvature of the spine by the *system of recumbency;* and the general advance in the construction of orthopædic instruments for the cure of club foot, &c., led gradually to the improvement of such portable contrivances for supporting the spine as had been previously employed by Tavernier and others.

Time will not allow of my discussing the merits of the various instruments now in use; they vary considerably in their principles of construction as well as in the mechanical details, and the kind of apparatus to be used in any particular case must depend upon the form and situation of the curve; and also upon the age of the patient. In delicate girls with slight curvature I find the lightest form of instrument such as that well known as the *Eagland belt* quite sufficient, and this instrument has been strengthened and otherwise improved in its construction for me by Mr. Blaise, of St. James'-street, but in many cases a much more powerful instrument is necessary, and a second plate must be added.

There can be no doubt that the greatest advance which has taken place in modern times in the treatment of lateral curvature of the spine has been made through the *system of mechanical treatment* by means of spinal instruments; but as might have been anticipated from the novelty and importance of the system, too much has been expected from it, and also too much claimed for it by its principal advocates. Compared with other systems, there can be no question as to the superiority of the mechanical treatment, and if one system alone was to be adopted, this would be most entitled to our confidence, but the evidence which I have laid before you of the constitutional as well as the local causes which contribute to the production of spinal curvature; and the nature of the structural changes which occur even in slight cases of lateral curvature, must prevent our placing sole and implicit confidence in the power of any spinal instrument to cure the curvature. I have no hesitation in stating that it is impossible to straighten a curved spine by any mechanical means in the same manner and upon the same principle as we can straighten a bent knee, ankle, or any other moveable articulation; but in combination with other means, such as partial recumbency, and in some slight cases with muscular exercises, it is quite possible to cure a curvature of the spine when slight and of recent formation in young persons; and it is certainly within our power most effectually to arrest the progress of curvature when more severe.—*Med. Times and Gazette, Dec.* 28, 1861, *p.* 657.

## 59.—ON CERTAIN GRAVE EVILS ATTENDING TENOTOMY, AND ON A NEW METHOD OF CURING DEFORMITIES OF THE FEET.

By Richard Barwell, Esq.

The author (in a paper read before the Royal Medical and Chirurgical Society) remarked that the purely mechanical treatment of club-foot, which had since 1832 being superseded by tenotomy, could as a rule deal very successfully with those lateral twists of the extremity which are called varus and valgus, but that the equinal deformity could hardly ever be cured by these means. This peculiarity is attributable to the great power of the muscles attached to the tendo-Achillis; for contracted muscles may be lengthened with an ease which is, *cæteris paribus*, in direct ratio with their power. At the present time the treatment of pes equinus is, above all others, simple and satisfactory, because division of the tendo-Achillis gives the means of lengthening this part in a few days. In a similar manner, though in different degrees, the treatment of all other deformities in which extension mingles is assisted by this section. The inward twist of the foot—varus—is now treated by division of four tendons at least (tibialis posticus and anticus, flexor longus digitorum and the tendo-Achillis), and frequently also of the plantar fascia. A very similar treatment is inflicted on valgus. "The peronei tendons are to be divided, or, together with them, those of the extensor longus digitorum and the tendo-Achillis, and also those of the tibialis anticus and extensor proprius pollicis, when they are retracted." Can we be surprised that after this there should be, as admitted by the above-quoted orthopædist, "difficulty in continuing sufficient support to the arch of the foot? and even after the arch has been perfectly restored, support is required during many months." But if the deformity have arisen, not from spasm in the predominant muscles, but from debility of their antagonists, division of the still active tendons produces disastrous consequences. Mr. Barwell was led, four years ago, when examining some old cases of tenotomized feet whose actions were clumsy and ill performed, to doubt the desirability of dividing several other tendons as unhesitatingly as above described; and he thinks himself now in a position to explain the dangers and evils resulting from such practice. In 1842, M. Bouvier reported to the Académie Royale several experiments performed on the tendons about the feet of dogs, and one on a horse. In no one case did these tendons unite so as to be of any subsequent value. Moreover, there are examples on the human subject in a recent work on the "Reparative Process in Human Tendons." Mr. Adams has collected together

all the cases he could get at, of post-mortem examination after tenotomy. Amongst these there are seven in which other tendons besides the Achilles were divided, and in every one of them one or more of the severed tendons is either not united at all, or has become attached to the bone or surrounding parts, so as to be of no possible use hereafter. The evident and sole conclusion from them is, that such muscles as the tibialis posticus and flexor longus digitorum might as well be struck by sudden and irremediable paralysis as be subjected to the knife of the tenotomist, and that the tibialis anticus is only a little better situated. Probably the peronei are quite as exposed to non or false union as the two first-named muscles, since their situation behind bones is analogous. Thus, to divide these tendons is to produce a lameness, perhaps less apparent, but more incurable, than that for which the operation was originally performed. Mr. Barwell then proceeded to question the necessity of dividing those tendons in order to restore the shape of the foot, quoting Dr. Little's opinion, that indiscriminate section was the rule, even with regard to the tendo-Achillis, and giving his own experience that division of the other tendons was hardly ever necessary. In support of this view he mentioned another curious result of the above-named autopsies—namely, that in one case an attempt had been made to divide the posterior tibial tendon, and the limb came so easily into shape that it was thought to have been divided, but after death was found to have remained whole. With all these facts before us, the author said it was our duty to avoid dividing tendons about the foot, and to return to mechanical treatment. The mechanical shoes of the best form receive the foot, and then act simply by twisting it in a direction contrary to the abnormal bend. In such contrivances no heed is taken of the condition of the muscles nor of their direction, and they are all such as greatly prevent the power of walking. The author makes the following propositions :—The balance of the foot is kept up by a set of muscles which antagonize one another. By abnormal predominance of any one set deformity is produced. The predominance may be from excessive contraction of the prevalent muscles, or deficient action of their antagonists. In either case our efforts should be directed to counteract the predominant force by applying a power in the direction of and as much like the deficient muscle or muscles as possible, and at the same time, the foot must be allowed its use. These indications are thus carried out :—A broad and long piece of strapping-plaster, spread on a thick material, is made to adhere over the origin of the muscle and along its course. Upon this is laid a piece of sheet tin, long enough to reach from the upper part of the leg to just above the ankle, and carrying at its upper part a wire

loop; the piece of strapping is turned back over it, and lies with its adhesive side outwards. Another piece of strapping is placed on the foot upon the insertion and along the course of the tendon; the end of this strapping reaches to the bend of the ankle, and is folded over (the two sticky sides opposed), and an eyelet let into it. An assistant is now to hold the limb as near as possible in the right position, while it is being smoothly strapped from the toes to the knee, leaving out the end (with its eyelet) of the piece on the foot and the wire loop at the upper part of the leg. Between these two—the one representing the origin, the other the insertion, of the muscle—there is to be stretched an india-rubber spring, at a proper degree of tension. Thus, while there can be considerable force used in the direction of any muscles in the leg, the *point d'appui* is so supported by a loop of strapping, which takes its bearings from both the skin of the leg and the surrounding plaster, that no injurious pressure occurs anywhere. There are also some little contrivances for changing the direction of the force,—as for the peronei tendons. Models showing this method and treatment were on the table, and cases of cure by these means were read.

Mr. Holmes Coote said that the Society felt indebted to the author for his paper, although it touched upon a class of cases that had of late years received, it must be owned, a very large share of general attention. Mr. Coote had listened in vain for the grave objections to tenotomy; and as for the treatment of deformities by extension, that was a principle dating from the earliest epochs of medicine. The three cases quoted by the author in support of his principle were, as far as Mr. Coote understood them, 1, a case of paralytic talipes equinus; 2, a case of weak ankle; 3, a case of flat foot. Now it was well known that the treatment of such cases by mere mechanical appliances was very generally all that was required. Tenotomy was the exception. But the division of tendons he affirmed to be almost invariably necessary in cases of congenital deformity, to which the author had not alluded. Experiments, as regards tenotomy performed on animals, were not satisfactory, owing to the impossibility of keeping the limb quiet or the bandages properly applied. It did not occur to him that the evidence offered by Mr. Adams, in his late work referred to by the author, was opposed to tenotomy, but he (Mr. Coote) affirmed that even if some of the smaller tendons did occasionally adhere to the sheath or neighbouring parts (an accident which should not happen), that inconvenience was not to be allowed to weigh against the great advantage of enabling an infant with a club-foot to put the sole to the ground before the parts had become moulded to their abnormal position.

Mr. William Adams observed, that when he first heard the

title of the paper, he expected that a general onslaught would be made on the practice of tenotomy, and that many serious evils would be traced to it, but was soon gratified to learn that the subcutaneous division of tendons was not objected to by the author. He had listened for the grave evils suggested by the title, and thought that after hearing the paper the Society might still ask what those evils were? He had heard only of certain imaginary evils possibly resulting from the non-union of the posterior tibial tendon, or from the adhesion of the divided extremities of this tendon to the bone, and he was surprised that all the facts stated in the paper had been taken from his own (Mr. Adams's) book, on the "Reparative Process in Human Tendons," in which one instance of non-union of the posterior tibial had been recorded, and another in which non-union appeared probable, but not certain, as the reparative process was proceeding. Other cases had been quoted in which this tendon had become adherent to the bone, but no evils or ill-effects to the patients had been traced to these results, and it might be a good surgical compromise to cure a case of severe club-foot, even at the more or less complete sacrifice of the posterior tibial muscle. The adhesions described might limit, but would not completely destroy the action of the posterior tibial muscle. In reference to this point Mr. Adams did not consider that the author's statements were accurate, or that the analysis of his cases had been fairly made. Aware of some evils arising from imperfect union of the posterior tibial tendons, he (Mr. Adams) had now adopted the plan of extending the muscle by bandaging the foot to a splint, for a week or more before the operation, and making the after extension very slowly. The author appeared to consider that tenotomy was unnecessary in paralytic deformities, but according to his (Mr. Adams's) experience, these were the cases from which the most brilliant results were frequently obtained, when the cases were judiciously selected and treated. Children and adults who had not walked for several years, or who had never walked, were frequently enabled to do so with mechanical supports after the contractions had been removed by tenotomy. Again, in reference to the method of treating deformities of the foot proposed by the author of the paper, he had listened in vain for novelty, and the plan of making extension by india-rubber bands was certainly not new. He (Mr. Adams) had seen a great variety of instruments constructed upon this principle, four or five years ago, by Mr. Bigg, who had applied them extensively, and had adapted them to some cases in St. George's Hospital. The continuous and increasing pressure produced by the elastic force could not be borne in many cases, and in some instances had to be discontinued from the sores produced, so that it was best adapted to severe cases.

it was much better to regulate the force by means of the cog-wheel. The views of the author were not new; this plan of treatment was only adapted to slight cases.

Mr. POLLOCK desired to remind the Society that the last speaker was in error in saying that Mr. Bigg made trials of instruments in St. George's Hospital. Mr. Bigg was instrument-maker to the hospital, and as such he merely acted under the directions of the surgeons.

The Author, in reply, said he was aware that the cases he brought forward were not of the most obstinate description; but from the ease with which his treatment reduced all pedal deformities except equinus, he had no fear whatever that it would fail in the most severe form of varus. The necessity for rapidly changing the position of the foot in congenital varus was illusory, since section of the tendons was undertaken long before the child could use the foot; and his plan of treatment would bring the sole into the walking position before the infant was old enough to stand, and have the additional advantage of preserving some use in the muscles. As to tenotomy in paralytic cases, the author could not agree with Mr. Adams that such practice was successful; on the contrary, he had seen many cases in which deformity had only been changed for a worse evil. Surely it is not reasonable nor physiological when certain muscles of a limb are paralysed, to divide the others? His (the author's) plan is simply to supply the amount of force necessary to the weakened parts. The success of this plan might be seen in the sample of flat-foot which he (the author) asserts arises from defect of power in the tibialis anticus muscle. He could easily understand that Mr. Bigg should find india-rubber bands produce slough; such result depends upon the mode of adaptation. When used according to his method, no such accident would follow.—*Med. Times and Gazette, Dec.* 7, 1861, *p.* 593.

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## 60.—ON THE PLASTER OF PARIS SPLINT.

By Dr. LITTLE, New York.

The limb is first shaven, or slightly oiled; a piece of old coarse washed muslin is next selected of a size so that when folded about four thicknesses it is wide enough to envelop more than half of the circumference of the limb, and long, to extend from a little below the under surface of the knee to about five inches below the heel. The solution of plaster is then to be prepared. Fine, well dried, white plaster had better be selected, and before using, a small portion should be mixed with water in a spoon and allowed to "set," with a view of ascertaining the length of time requisite for that process. If it is over five

minutes, a small quantity of common salt had better be dissolved in the water before adding the plaster. The more salt added, the sooner will the plaster "set." If delay be necessary, the addition of a few drops of carpenter's glue or mucilage will subserve that end. Equal parts of water and plaster are the best proportions. The plaster is sprinkled in the water and gradually mixed with it. The cloth, unfolded, is then immersed in the solution and well saturated; it is then to be quickly folded as before arranged and laid on a flat surface, such as a board or a table, and smoothed once or twice with the hand in order to remove any irregularities of its surface, and then, with the help of an assistant, applied to the posterior surface of the limb. The portion extending below the heel is turned upon the sole of the foot, and the sides folded over the dorsum and a fold made at the ankle on either side, and a roller bandage applied pretty firmly over all. The limb is then to be held in a proper position (extension being made if necessary by the surgeon), until the plaster becomes hard. The time required in preparing the cloth, mixing the plaster, and applying the casing to the limb, need not take more than fifteen minutes. After the plaster is firm, and the bandage removed, we shall have a solid plaster of Paris case partially enveloping the limb leaving a portion of its anterior surface exposed to view. If any swelling occurs, evaporating lotions can be applied to the exposed surface, and we can always easily determine the relation of the fractured ends. If necessary, an anterior splint, made of the same material, can be applied and then both bound together with adhesive plaster, and, if desirable, a roller bandage over all. If the anterior splint is not used, two or three strips of adhesive plaster, one inch wide, or bands of any kind, may be applied around the casing, and will serve to keep it firmly adjusted to the limb. Thus applied, we have a most beautiful splint, partially enveloping the limb, making equal pressure, light, and allowing the patient to change his position in bed, or to sit up in a chair, or go about on crutches; and a splint which can be easily made in any place where plaster is to be had. —*Med. Times and Gazette, Jan.* 4, 1862, *p.* 23.

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## 61—ON SOME INJURIES OF THE HEAD.

By James F. West, Esq., Surgeon to the Queen's Hospital, Birmingham.

[In punctured fracture of the skull the majority of the fragments of bone are detached from the inner table; in depressed fracture from the outer table. In both cases the rule of treatment enjoined by most surgical authorities, is that of operating

with the trephine or elevator immediately, without waiting for the supervention of symptoms of compression or irritation of the brain and its membranes. This rule is a wrong one, and it is much better to wait until the occurrence of symptoms of compression, showing that the fragments of bone are by their pressure interfering with the functions of the brain.]

How can we hope trephining to succeed in cases where, directly we have taken away a crown of bone from the outer table, we immediately, in consequence of the greater extent of injury inflicted on the inner table, lose almost every chance of gaining a *point d'appui* for completing the removal of the subjacent portion of the crown of bone (that belonging to the tabula vitrea), and so find ourselves probably doing great mischief by disturbing the fragments of bone, and so further lacerating the dura mater? Or need we be surprised, should we be unfortunate in the use of the instrument, and making pressure upon some part of the bone which we had considered sound, find the fragment give way, and either it or the trephine stick into the dura mater, and so set up certain inflammation there?

The risk of injury to the dura mater and to the brain, however careful we may be in the performance of the operation, is very great; and I believe it is owing to that cause that we now so seldom see the once common operation of trephining resorted to. The chief difficulty we have to contend against in cases where we leave nature to separate the bone by suppuration and ulceration, is the tendency to hernia cerebri through the fractured opening in the skull; but the same difficulty is met with, and even in a more marked degree, when a large aperture is made in the skull by the trephine; and moreover, I think it is a difficulty which may be overcome by the maintenance of steady and continuous support by means of a graduated compress, from the very commencement of the case.

It would appear that death of the bone does not result when some portion of the vault is fractured, or even when it is depressed, unless the pericranium is stripped from the bone over a very considerable extent. Such an issue is, indeed, but rarely met with, and we may, therefore, in all slight cases of fracture of the skull, when there is either simple fissure or depression of the outer table only over a limited space, predicate with tolerable certainty that no exfoliation will take place; and we may regulate our steps accordingly, endeavouring by all means to secure union of the lacerated scalp by the first intention, without any fear of ulterior mischief accruing from suppuration and ulceration.

It further seems obvious, that all attempts to raise depressed fragments of bone are unjustifiable, unless from the persistence

of symptoms of compression we are led to suppose that the depression implicates the inner as well as the outer table of the skull, and that a fragment is impinging on the dura mater, or on the cerebral substance itself and setting up mischief there.

A very extensive fracture of the outer table may exist without giving rise to any cerebral mischief whatever. No symptoms of either inflammation or irritation of the brain manifested themselves throughout the progress of one such case; the scalp wound healed rapidly, and as far as the injury to the head went, we might have anticipated a successful issue. The post-mortem examination showed that no meningitis had taken place, and that death had resulted from pyæmic poisoning, which clearly had its origin in the disunited fracture of the humerus, and was in no way connected with the fracture of the skull.—*Lancet*, *Feb.* 22, 1862, *p.* 197.

## ORGANS OF CIRCULATION.

### 62.—ANEURISM OF THE FEMORAL ARTERY—EMBOLIA—OBSTRUCTION BY SPHACELUS OF THE LEG AND FOOT—AMPUTATION—RECOVERY.

By Dr. A. Leith Adams, Surgeon to the 22nd Regiment.

[Instances of spontaneous embolus by the loosening of an aneurismal clot are comparatively rare.]

Sergeant H. B., 1st Battalion, 22nd Regiment, aged 36, of spare habit, wiry, and muscular, always enjoyed good health, having scarcely been a day absent from duty for a period of eighteen years. On the 25th of February, 1861, immediately after dismissal from Light Infantry drill, he felt as if something had suddenly given way in the right ham and calf, followed by great numbness and a pricking sensation all over the leg and foot. I examined the parts a few minutes afterwards.

From the knee downwards the limb was cold, pale, and bloodless, with scarcely any sensation and almost total loss of voluntary motion. He complained of severe cramp-like pains, especially in the calf. No arterial pulsation was observable in the right extremity except at the groin, where the superficial femoral was 60, full and strong. About the opening in the adductor magnus a diffuse tumour was felt, hard and inelastic, and nearly the size of half an orange. The patient stated that during the autumn of 1858 his attention was first directed to the swelling, which was always hard and throbbed a good deal, especially during bodily exertion, or when he became in the

least degree excited, but that it never gave him the slightest annoyance or concern. The numb and pricking sensations continued all over the leg and foot for the three following days, when the temperature began to rise in the calf, which had now become much swollen, tense, and tender.

The ankle and foot, however, remained at the same low temperature and were covered with pale and livid blotches. On the eighth day a red spot appeared on the dorsum; in the course of the following week the lividity of the foot disappeared and was succeeded by swelling and an extension of the lurid red appearance, except in the points of the toes and sole, which continued blue and gangrenous. The parts now presented the usual symptoms of mortification advancing to sphacelus; blisters formed on the foot and ankle until the coverings of the heel and portions of the outside of the leg above the ankle began to slough and give out a dark-coloured and offensive discharge. At last a line of demarcation formed across the leg immediately below the calf, and became fully developed on the twenty-second day. The patient, who had hitherto withstood the injurious effects of the disease very well, began to lose strength from profuse perspirations. On the following day, March 19th, when he was under the influence of chloroform, I removed the limb by the circular operation at the lower third of the thigh, after a vain attempt to operate under the knee, where the bellies of the gastrocnemius were found in a state of slough, and gangrene spreading upwards and below the external line of demarcation.

The femoral artery was found empty and gaping; in consequence, it was not tied. The parts rapidly healed, and the patient recovered without a bad symptom, owing to an excellent constitution, aided by as indomitable pluck as ever graced a British soldier.

A recent clot was found in the popliteal artery, but its coats were not diseased, neither were those of the arteries of the leg, although it can scarcely be questioned that a portion of the contents of the aneurism suddenly blocking up the vessel at a higher point was the cause of all the evil.

The aneurismal tumour continued decreasing in size from the date of the accident, and two months afterwards completely disappeared.

There can be no doubt that the practice of operating at an early period in spreading gangrene, although sanctioned by names such as Larrey, Guthrie, Brodie, &c., is not always a safe, and possibly not a judicious procedure. Mr. Fergusson's experience of early amputations under like circumstances is particu-

larly disastrous. He says, "I might possibly, in future, resort to a similar practice, but should feel greatly inclined to wait for a line of demarcation."

If amputation below the knee had been performed in the sergeant's case on the sixth or eighth day, when the foot showed evident symptoms of spreading gangrene, would the subsequent appearance of the disease in the calf have been averted? As far as one can reason from a solitary example, it appears to me that nothing is gained, and a great deal is at stake, by the surgeon's early interference in such cases. On the other hand, by waiting Nature's indications, and amputating when a line of separation has formed, it would be difficult to conceive a case of *sphacelus from sudden and spontaneous obstruction of the arteries of a limb* where such a plan of procedure would be unjustifiable.—*Med. Times and Gazette, Feb.* 15, 1862, *p.* 156.

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## 63.—ON THE TREATMENT OF ANEURISM OF THE EXTREMITIES BY FLEXION OF THE LIMB.

By Ernest Hart, Esq., Surgeon to the West London Hospital.

[The first case treated by the author by means of flexion of the limb was published in 1859. (Retrospect, vol. xl. p. 118.) The present paper (read before the Royal Medical and Chirurgical Society,) an abstract of which we give, details Mr. Hart's subsequent experience.]

The author remarked that the effect of forcible flexion of the healthy arm or leg might be observed in the considerable retardation of the blood flowing through the main artery, and the almost entire extinction of its pulse.

The application of this principle to the extreme flexion of the arterial trunks was obvious. Their structure favoured the effect described. Probably, also, the projecting bellies of the contracted muscles might cause some pressure on an artery which lay in contact with them; and in the case of an aneurismal swelling some direct pressure might be made upon the tumour; but of the occurrence of this circumstance, or of its desirability, the author was doubtful.

It was now pretty clearly established and generally accepted that the object in treating aneurism was not to cut off the supply of blood, or altogether at once to arrest circulation in it, but to cause such a retardation of the current as would lead to the gradual deposit of fibrinous laminæ in the interior, and so effect its gradual consolidation. The former method was uncertain and dangerous; the latter safe and permanent in its results. In the case in which the author first applied the method of flexion to the treatment of popliteal aneurism, and in that in

which Mr. Shaw subsequently tested it, they were completely successful in obtaining the latter result. Mr. Hart had met with similar success in the following case:—

*Case* 3.—In September, 1860, a healthy and robust-looking man, aged 35, was sent to him by Mr. Bridge for treatment of a popliteal aneurism of the left leg. It was of the size and shape of a large lemon, projecting on the inner side of the ham. It had a loud bruit and very perceptible thrill, but was not entirely reducible. The skin was somewhat discoloured over the tumour as though from a recent bruise. The patient had noticed the existence of this pulsating tumour for nearly two years. It had increased somewhat in size during the first nine months that he had observed it, and he had several times thought of seeking advice, but as he had felt little pain from the disease, he had neglected its cure. About three weeks before the author saw him he had received a blow in the region of the tumour, and since then he had suffered pain in it, and the swelling had increased. The arteries of the leg pulsated distinctly, and there was no very marked dilatation of the veins below the knee. There was no history of gout or syphilis. A week was allowed to elapse before commencing any treatment. The discoloration of the skin was then no longer visible, and the aneurism was pulsating distinctly as before. Mr. Hart desired in this case to separate the effect of treatment by flexion as clearly as he could from any collateral or adjuvant agencies. He did not, therefore, employ any form of medical treatment whatever; nor did he invalid the patient by enjoining the horizontal position and confinement to bed. He rolled the leg in a flannel bandage from the feet upwards, stopping below the tumour so as not to compress this in any way. He then bent the leg on the thigh, and retained it in the flexed position by means of three pieces of bandage attached to the ankle and along the leg. The patient was allowed to rise and go about the room by the help of a crutch. The forced flexion of the leg entirely arrested the pulsation of the tumour. Complete flexion caused, however, an inconvenient degree of pain, and after eight hours he relaxed the bandages so as to leave the leg in a semi-flexed position. At night he ordered one grain of solid opium. The patient slept well. Next morning the tumour still pulsated distinctly. He again completely flexed the limb, and during the next two days it was retained in that position, being unmoved during the night. The patient moved about freely the whole time, by the help of a crutch and stick, and occasionally of a wooden pin leg roughly adjusted below the bent knee. He occupied himself in reading, writing, and smoking. He complained of pains in the knee-cap, but after the first night he slept moderately well without opium. On the fourth

day Mr. Hart somewhat relaxed the bandages, and examined the tumour. He had the satisfaction to find it that it was as nearly as possible solidified; a faint thrill, however, could be detected by placing the hand on the tumour. He again replaced the leg in the position of forcible flexion, and retained it so until the end of the sixth day. He could not then find on examination any trace of pulsation or thrill. The articular arteries beat perceptibly, and he concluded that the collateral circulation was satisfactorily established, and the aneurism consolidated by the deposition of laminated clots. As a desirable measure of precaution, he retained the leg in the semi-flexed position for another week—a proceeding to which the patient, who fully understood the nature and object of the treatment, offered no objection. The subsequent progress of the case was in every way satisfactory; it offered no peculiarity worthy of note. It was three weeks from the conclusion of the treatment before the patient ceased to limp from the stiffness of the knee caused by its confinement.

It seemed to the author that this case sufficiently established the simplicity and efficiency of the treatment of popliteal aneurism by flexion in certain cases. Here he was enabled to effect the cure practically in six days, without the use of any apparatus—without the intervention of any watchers or assistants—without risk or danger, This patient had been cured of popliteal aneurism—a disease formerly so formidable—without being confined for a day to bed. In order to afford the grounds of a judgment on the relative merits of the flexion treatment, it might be proper to add a brief *resumé* of the cases which had been successfully treated by other surgeons in this country who had employed the method since the author had the honour to introduce it to the notice of the society. Some of these cases had been treated by flexion solely; in others, that method had been conjoined to the treatment by compression.

*Case* 4.—*Popliteal aneurism; recurrence after ligature of superficial aneurism; treatment by compression unsuccessful. Cure by flexion of the leg.* By James Spence, Esq.—T. H., a coal-carter, was admitted into the Royal Infirmary, Edinburgh, under the care of Mr. Spence, in August, 1858, with a pulsating aneurismal tumour, of the size of an orange. The superficial femoral had already previously been tied in May, 1857, with the effect of producing solidification of the tumour. But the pulsation recurred a few days before this second admission, and the tumour was then as large and pulsating as violently as before the artery was tied. Compression was carefully employed over a period of upwards of five months, but the tumour was at the end of that time increasing instead of diminishing. The patient left the house for some weeks, but returned, desiring to submit

to any operation that might be thought necessary. The following is the sequel of this very interesting case in the words of the surgeon :—

"On examining the aneurism at this time, its condition was as follows :—It was the size of a pretty large orange, and pulsating strongly; the femoral artery could be felt to pulsate for about four inches below Poupart's ligament, ceasing to beat about an inch or less above the point where the superficial femoral had been tied. Pressure on the common femoral completely and readily arrested pulsation in the sac. Compression of the superficial femoral above the point tied also did so, but required very firm pressure to be made directly backwards. Compression along the course of the superficial femoral below the point tied produced no effect until it was made over the lowest part of Hunter's canal, when the pulsation of the aneurism became thoroughly commanded by it. Under these circumstances, after weighing the comparative chances of success between ligature of the external iliac, or the lower part of the superficial femoral, the latter plan was decided on, and the patient willingly gave his consent. But as the case did not seem a very hopeful one, it was thought as well to try the plan of flexion of the leg upon the thigh recently proposed. On bending the limb fully, all pulsation was at once and completely arrested, and the limb was bandaged in that position. But the patient could not bear such flexion to be kept up. Accordingly, a slipper, with a slip of bandage sewed to the heel, was fastened to the foot, and the slip of bandage was then fastened to a loop connected with a broad bandage round his pelvis, and this gradually tightened, so as to increase daily the flexion of the leg on the thigh. This treatment was commenced on the 20th of May, 1859. On the 23rd, the pulsations were weaker, but returned when flexion of the limb was discontinued. On the 27th, the pulsation diminished; tumour smaller and firmer. There was still a tendency to increase of pulsation when the limb was allowed to remain straight for any length of time. On the 6th of June, the pulsation was scarcely to be felt in the aneurism, even when flexion was discontinued. The tumour felt solid and smaller, and enlarged anastomosing vessels could be felt over it and around the knee. The patient was now allowed to walk about with crutches, the affected limb being suspended in a flexed position. When in bed or sitting in the ward, he was desired to extend the leg occasionally, and not to keep it constantly bent. On the 23rd of June, there was not the slightest pulsation to be felt in the aneurism, which was firm and considerably diminished in bulk. Several very large anastomosing vessels could be felt over the tumour, the limb was of good heat, and there was no stiffness of the knee-

joint. I kept the patient for about three weeks longer in the hospital under observation, and he was dismissed cured. Since then he has returned to his usual occupation of coal-carter, which requires him to walk considerable distances, but when I last saw him there was no tendency to return of the disease."

The author was not unaware that the flexion treatment had not always been successful. In cases under the care of Mr. Paget, Mr. C. H. Moore, and Mr. Birkett respectively, it had been employed, and disused as ineffective. The first two were, however, cases in which the contents of the aneurismal sac escaped by rupture or ulceration. These are severe forms of the disease in which extreme treatment is always likely to be required. In all three compression also failed, and ligature was resorted to. In the hands of other surgeons the method had been found painful, and apparently abandoned on that account. On this head he would only remark, that other methods of treating aneurism are commonly both more painful and tedious, as well as attended with greater risk.

The first results of any method of treatment are likely to be, as they always have been, less perfect and less uniformly successful than those which follow upon a larger experience and a more assured application. It is probable that attention to certain points of detail may tend to prevent pain and inconvenience. By carefully bandaging the limb, support is given to the superficial veins and rest to the contracted muscles. Friction of the limb upwards may serve the same purpose. Inunction of the knee-cap with oil and chloroform diminishes the sensation of stiffness and relieves pain. By allowing the patient to rise from his bed and dress himself, much of the tedium is obviated and coagulation of the fibrin aided. Sleep follows much earlier at night. Any favourite habit, such as smoking, may be usefully permitted, with the same object. It is desirable to bespeak the assistance of the patient himself, by explaining the nature of the malady and treatment. Flexion should be employed with care, and graduated. The author's reason for referring to these minutiæ might be found in the past history of this method and of the cognate treatment by compression, in which attention to minute details had been shown to produce a remarkable increase in the success obtained. For success, a watchful and intelligent interest was necessary.

In reviewing the cases already successfully treated by flexion, it seemed to the author that there were many elements for a favourable judgment. Compared with compression, it had the advantage of not requiring the constant and watchful attention essential to the success of that method. No instruments were employed, and no assistants were needed. There was no risk of ulceration of the skin, of erysipelas, or of that other rare effect

described by Mr. Oliver Pemberton—the production of aneurismal varix at the site of pressure. If not ultimately successful, it would still have had the effect of beneficially developing the collateral circulation. Of course, where practicable, it would always be preferred to the use of the knife. The interesting case of recurring popliteal aneurism under the care of Mr. Spence, affords an instance in which flexion effected a cure where the superficial femoral artery had always been tied, and compression during five months had failed; the undesirable alternatives being the ligature of the femoral close to the sac or the external iliac, under unfavourable circumstances. Mr. Spence states: "From what I saw of the plan of flexion of the limb in this case, I would have great hopes of its success as a curative measure, far simpler and more efficacious than any form of compression I have seen employed, devoid of all its risks, and not interfering with, but rather beneficial as a preparation for, ligature of the artery, should it fail in itself accomplishing the cure."

The cases related show that flexion may be satisfactorily employed as aiding compression where this is desired. Finally, Mr. Hart said that he did not now seek to define the position of the flexion treatment in relation to aneurism, or to establish arbitrarily its superiority to other methods. He desired to leave this matter to the judgment and further experience of the surgical profession. His object in this communication had been to submit to this Society the further facts which had come to his knowledge since he had the honour first to bring the treatment to their notice, and which furnish the grounds for a more complete judgment of its merits and deficiencies.

Mr. Solly said that the profession was greatly indebted to Mr. Ernest Hart for again bringing under their notice this simple plan of treating aneurism by flexion. This second paper presented a series of facts; and no one who heard those facts could hesitate to say that this was an ingenious and successful procedure, constituting an advance in the practice of surgery. He (Mr. Solly) wished that he could say he had any practical experience of the plan, but he should employ it on future occasions. Mr. Hart, however, must be aware that some aneurisms would not yield to this plan, and that neither this nor indeed any other method was uniformly applicable. He might mention to the Society a singular case of aneurism now under his care, which presented some features of interest. It was a case in which the patient had a pulsating tumour on the arm; the arm had been paralysed. The skin over the tumour was stained by a network of vessels, but this was superficial. His colleague, Mr. Simon, was disposed to connect the aneurismal condition with the paralysis of the coats of the artery; but the

nature and origin of the disease were doubtful. Mr. Solly referred to the medical treatment of aortic aneurisms by restricted diet, rest, and occasional doses of aconite, in terms of praise, mentioning cases now under his observation in which it was doing good.

Dr. HARE also referred to a case in which it had been of benefit.

Mr. WILLIAM ADAMS said that Mr. Hart's paper described what was evidently a great step in advance in the treatment of that very interesting surgical affection, aneurism of the extremities. It was to be regretted, in his opinion, that more attention had not already been given to this valuable improvement by competent surgeons, for he did not doubt that in the end a long list of successes would adorn this treatment, with which Mr. Ernest Hart's name was and must always be so honourably associated. In the three years which had elapsed since that gentleman's paper on the flexion treatment appeared in the "Transactions," there seemed to have been, however, nine cases illustrating the successful applications of this method. The treatment was founded and explained in the paper upon an accurate view of the pathology of aneurism. It was an ingenious and clever application of pathology to therapeutics, for which the author deserved great credit. The case in which flexion was shown to have effected a rapid cure of a popliteal aneurism, after the ligature of the femoral artery in the front of the thigh had been performed, and after a patient trial of five months' compression had failed, proved how especially this method might avail as a new and efficient surgical resource in the treatment of aneurism. Here it had afforded a safe and effective substitute for ligature of the iliac under unfavourable circumstances, or of the femoral artery in its diseased part close to the sac. In Mr. Hart's own case, for the first time a patient had been cured of popliteal aneurism without a day's confinement to bed. In any cases which came under his (Mr. Adams's) care he should certainly employ this method, and it might be expected that in a large number of cases it would supersede any other hitherto employed.—*Lancet*, *Feb.* 8, 1862, *p.* 147.

## 64.—NEW MODE OF MAKING COMPRESSION IN POPLITEAL ANEURISM.

### By Dr. BLAND.

Dr. Bland, of Sydney, describes a mode of making pressure in a case of popliteal aneurism which he was induced to devise in consequence of the patient having refused to continue to submit to other procedures. The patient was placed in bed, on a firm mattress, in a half-sitting position, while the thigh was

made to form an inclined plane in the opposite direction to that of the body, the leg and foot being placed horizontally on a soft pillow, in a frame or cradle, raised some ten or twelve inches above the surface of the mattress, and the bed-clothes being kept from the foot by a foot-board. A tourniquet was applied to the groin, its principal object being to divert the stream of blood as early as possible from the inguinal artery into the internal iliac and its numerous large branches. Another tourniquet was applied to the upper border of the popliteal space, care being taken not to make any painful amount of pressure on the nerve.

"The direct advantages derived from these arrangements were numerous and important. First, the position of the thigh tended to reduce the force of the blood-stream flowing into the aneurism, while its return by the veins was greatly facilitated. Secondly, the regulated, but gradually-increasing pressure on the inguinal artery, while reducing the stream of blood in that vessel, forced at the same time a larger stream into the internal iliac and its numerous large, and ultimately anastomosing branches. The same remark applies to the pressure made on the upper part of the popliteal artery. Thus, every part of the arrangement was made to harmonise. The gradual obliteration of the main arteries concerned, was not only necessarily accompanied with the commensurate expansion of the extreme capillary ramifications, but that very expansion of the capillaries tended greatly to facilitate the obliteration of the main arteries in question; while, from the gradual manner in which this great change was brought about, the change itself was affected without pain or danger. The tourniquets each consisted of a light but strong iron ring instead of a strap. Each ring fitted a hinge on one side and immediately on the opposite side the ring readily opened or closed, so as to facilitate its application without in any way disturbing the patient. The pads, too, were not broad, but elongated, so that while the rings afforded a steadiness of position to the instrument in a transverse and vertical direction, an equal degree of steadiness was imparted to them in the longitudinal direction by the two pads attached to each tourniquet. The management of the tourniquets was simple, and attended with no incertitude or trouble. If the pad of either tourniquet began to feel a little tight, that of the other was at once slightly tightened, and then the pad which caused uneasiness was proportionately and cautiously unscrewed, so that the full amount of the requisite pressure was never, even for a moment, dispensed with. All this was carried on without pain or inconvenience to the patient, and in less time than it has taken to describe it; and so readily were the pads managed, that this alternate slight tightening and

loosening was not unfrequently, towards the close of the treatment, left to the discretion of the patient." At the end of about ten days all pulsation in the tumour had ceased, and at the expiration of a similar period the limb was cautiously extended and flexed, the tumour having become much reduced in size. In a few more days the patient was discharged cured.—*Australian Medical Journal, and Medical Times and Gazette, Jan.* 25, 1862, *p.* 88.

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## 65.—ON PLUGGING THE POSTERIOR NARES.

By Rawdon Macnamara, Esq., Surgeon to the Meath Hospital.

[Mr. Macnamara gives the plan employed in this operation by Mr. Smyly, senior surgeon to the Meath Hospital, from a communication by that gentleman.]

"The plugging of the posterior nares presents difficulties which deter some practitioners from attempting the operation. It is attended with great annoyance to the patient, not only at the time of its performance, but during the few days the plug has to remain; its removal also is sometimes found to be a troublesome task. No doubt patients will submit even to this to be relieved from impending danger.

"I shall not easily forget a case I was called to see seven miles from town. I arrived in the middle of the night, and found an elderly gentleman lying like a statue, being not allowed to move hand or foot, the windows were wide open, the patient was shivering with cold, his head, neck, and shoulders drenched, and covered with wet cloths; he was pallid, yet the blood continued to trickle. On the nares being plugged the scene was changed from wretchedness to comfort. To his surprise and delight the patient was changed to a comfortable bed, and was told he might, with perfect confidence, compose himself to sleep. I mention this to show the great value of plugging the nostrils, and its superiority to other treatment.

"The plan I advocate now is to fill the cavity of the nose with slips of lint introduced from before. I prepare a few slips of lint, about one foot long and half an inch wide; doubling two inches of the first slip over the end of a strong director, I pass it along the floor of the nasal cavity as far as the posterior nares; the rest of the slip is then packed in, and the extremity, which should be made to taper, is left projecting out of the nostril for the purpose of its more easy removal. After this another and another slip is thus introduced, until the cavity is full. The first gentleman I practised this plan upon was a very witty person, who was very much amused at the process of taking out the slips, which he compared to the unpacking of a

portmanteau; he named each slip as it came out after an article of dress."

Desault and Larrey were in the habit of employing a piece of linen sewed into the shape of a glove, which they pushed through the anterior nares backwards towards the pharynx; this was then packed with lint or some such material, and then drawn forwards, so as to press on the surrounding parts, and thus by direct pressure seal up the bleeding point. Though Larrey speaks highly of this procedure, still it presents many and obvious difficulties;—first, accurately to pack, and secondly, when it has discharged its duty, to *unpack* it. Mr. Bell improved on this plan by substituting for the linen bag, a piece of the small intestine of a pig; this fastened at one end is introduced as far back as the pharynx, and then filled with fluid or air, and pulled forcibly forwards, so as to act as a plug. In the 14th volume of the new series of the Medical Times and Gazette, p. 493, we find extracted from the Boston Journal an improvement on this suggestion of Bell's by Mr. Coate. I reproduce the passage:—"Plugging in Epistaxis.—Dr. Coate employs a very simple contrivance; it consists in a piece of pig's gut, eight inches long, tied at one end, and then turned wrong side out, so that the knot may be on the inside, on a child's silver canula. By this canula it is introduced through the nose to the pharynx, and then blown up, and tied an inch or so outside the nose. He often introduces a spoonful of saturated solution of alum into it. It plugs up both the posterior and anterior nares thoroughly, and to remove it, it must be pricked, and gently twisted or drawn out. Dr. Coate always keeps a yard or two of gut on hand in a bottle of diluted alcohol." Franck also recommends a plan of treatment based on similar principles, and these have been improved upon by M. Martin St. Ange, in his *Rhinobyon*. This has, superadded to a small bladder, a silver canula fitted with a stop-cock; the bladder is to be pressed back into the pharynx through the nostril. Through the canula either air or fluid may be passed to dilate the bladder, when the stop cock is turned, and the dilated bladder is then to be drawn forward until it is firmly pressed up into the posterior nares; the anterior are then plugged, and the operation is concluded. To withdraw it, the cock is turned, the fluid or air allowed to escape, and the instrument can be withdrawn, carrying before it all coagula, &c. Those who have employed this plan, speak highly in its favour. Its great merit consists in no interference through the mouth with the pharynx being required, as in the ordinary manner of plugging the posterior nares, which we shall presently describe, a point of no mean importance, as all know who have ever performed this operation, and in the great facility with which it can be effected in the younger periods of life, when

our patients are not usually so manageable as in more advanced age.

The method generally pursued in these countries of plugging the posterior nares, is so well understood, that it requires but a very few words of explanation at my hands; it can be done either with the ordinary No. 10 gum elastic catheter, or with that most ingenious instrument devised for the purpose, by M. Belloc. I shall first describe the steps of the operation as performed with the assistance of the gum elastic catheter, a correct comprehension of which will facilitate my description of Belloc's instrument. Having prepared a plug composed either of folded lint or of a piece of sponge, about the size and shape of the thumb, it is to be tied firmly in the centre by a piece of sound twine, about eighteen inches long, the knot being tied in the middle so as to leave two equal lengths of the twine hanging at either side; you then pass through the eye of the gum elastic catheter, from fifteen to eighteen inches of stout ligature silk, and pass the catheter almost directly backwards, along the floor of the nares, until it reaches the pharynx; the patient is then directed to open wide the mouth, and with a long dressing forceps *one* end of the silk is caught, and drawn forward out of the mouth, whilst the other, on the withdrawal of the catheter, hangs out of the nose; the portion of silk that is outside the mouth is now firmly attached to one end of the twine that has been tied round the plug, and by pulling on the end of the silk, that hangs outside the nose, we draw it also out through the nostril, and are in a position to proceed to place our plug *in situ;* grasping the plug between the index and middle finger of the left hand, we guide it back into the pharynx, and then up into the posterior nares, whilst with the right hand we draw forward the string that appears through the nostril, and pull the plug firmly into the required position; then the anterior nostril is to be plugged, and when that is done the string is to be again pulled firmly to secure the plug tightly in its position, then rolled round a small quill of lint, and secured with sticking plaster in some convenient position about the face. The string that hangs out through the mouth is to be fastened in a similar manner; taking care, however, that it is to hang loosely, in contradistinction to the nasal end, which is to be firmly on the stretch, so as to secure the retention of the plug in the desired position in the posterior nares.

Now, in description, all this seems simple in the extreme, but, in practice, it is anything but simple; a more troublesome proceeding, as this but too frequently proves, exists not amongst the minor operations of surgery. The patient, terrified at the loss of blood, half choked with the rush of blood down the throat ensuing on the position he is compelled to assume to allow the

surgeon to catch and draw forward the string, and especially so, if of tender years, becomes unmanageable, and even in the most docile it is not always an easy task to lay hold of the string, situated as it is far back in the pharynx. To obviate this inconvenience, M. Belloc has invented an instrument in size and shape resembling a number 7 silver catheter, but of exactly one-half the length. At its extremity it is furnished with an eye, which, however, is not attached to the body of the catheter, but to a spring that runs down within the catheter. Along this spring is a stylet, which can be drawn out so as to double the length of the instrument, and which, by a screw, can be attached to the end of the spring. When so arranged, by pressure on that portion of the instrument that is outside the nostril, the spring is protruded in the pharynx, carrying with it the eye armed with the ligature; this, in virtue of the curvature of the spring, presents in the anterior portion of the mouth, and thus enables the operator with ease to catch the ligature, and then the subsequent steps of the operation are exactly those already described. This instrument, with difficulty described, will be at once understood by the most cursory inspection, and will be found a most valuable adjunct in performing this troublesome operation. Still even it requires some dexterity on the part of the manipulator. In that which I possess the *curve* of the instrument is too great, and if it be carried too far backwards, the eye, on pressure, will not come forward on the dorsum of the tongue, but will, on the contrary, go *down the throat*, and thus complicate instead of facilitating the operation. We should, in its employment, not seek to *see* it at the back of the pharynx, but, *when we judge that it should be thereabouts, press down the button, and we shall have the gratification of seeing the armed eye travelling along the dorsum of the tongue, and can then readily seize the string that will facilitate our every other step.*

Having secured the plug in its proper position in the posterior nares, in the majority of cases of epistaxis, is not alone sufficient to arrest the hemorrhage, it still will be essential to plug the anterior nares, for this reason, that it very rarely happens that we can place the plug on the *exact bleeding point*, and if we fail in so doing, all that we shall have succeeded in effecting is the occlusion of the passage backwards, leaving that forwards open for the escape of the blood; if this, though, be also shut up, the effused blood is retained in the shut sac so formed, coagulates, and becomes itself the plug by which the further hemorrhage is arrested.

Presuming that the operation has been properly performed, and so far has proved successful, our next consideration will be, how long are these plugs to be let to remain? After twenty-four hours the anterior ones may be removed, but that in the poste-

rior nares must not be interfered with *until suppuration becomes well established*. There are two periods when we shall experience difficulty in removing the plug; when we try to do so at too *early* a period, before suppuration has been set up, or when we allow them to remain for too long a time, when we shall find, as the result, that granulations of luxuriant growth will have sprung up, and struck root into the plug, thus establishing firm connexions between the foreign body and the Schneiderian membrane, which can only be severed with considerable difficulty, a proceeding frequently attended with no trifling hemorrhage, Mr. Smyly, the respected senior surgeon to the Meath Hospital, informs me that he once saw the late Professor Macnamara experience considerable difficulty in removing a plug that had been permitted, by the surgeon who had inserted it, to remain an undue time without taking steps to remove it. If, on the occurrence of suppuration, the surgeon proceed to remove the plug, its extraction will be accomplished with facility and *safety*, for now there will be no danger of a recurrence of the epistaxis.

Authors on epistaxis write of this operation for plugging the posterior nares as if it were one of the most harmless in the entire range of surgery. In my opinion it is an operation that only should be had recourse to under the gravest circumstances, when every other method of arresting the flow of blood has been put in force and failed; when, in fact, it becomes a question with the surgeon whether to have recourse to it, or submit to the loss of his patient. Why I entertain this opinion I shall now briefly state. In the first place, even when most expertly and successfully performed, it is a proceeding most repugnant to the patient's feelings, and most incompatible with his comfort; the *malaise* that attends it is very considerable, the sufferer being, the whole time that the posterior nares are plugged, compelled to breathe through his mouth, which enforces an open and consequently a dried up, parched, condition of that organ: the sensation of the foreign body in this situation is indescribably unpleasant, so much so that we frequently experience considerable difficulty in inducing our patients to submit to it for the necessary length of time. Still, were this all, I should not write in such strong terms of disapprobation. But it is not all. Mr. Fleming informs me that the late Professor Colles entertained a very decided objection to this operation, founded on the fact of his having been called in to see a patient in whom tetanus ensued on this *trifling* operation, and which this distinguished surgeon attributed alone to the presence of the plug, acting as a foreign body, in the posterior nares. Nor is this the only and most serious danger; a very slight cause may loosen and detach from its position the plug in the posterior nares, when it will fall down upon the epiglottis, and produce almost immediate

death. In such an occurrence as that it is this the value of the piece of twine coming out through the patient's mouth will be recognised; in such an event it can at once be seized by a bystander, or by the patient himself, the plug instantly withdrawn, and the patient thus preserved from certain immediate death. In the article on epistaxis in Costelloe's Practical Surgery, I find the able writer deprecating the employment of this string, although, in a subsequent portion of the same article, he alludes to this danger, and gives a case on the authority of M. Martin St. Ange, where a fatal result, consequent on this very accident, occurred in the medical wards of the Hotel Dieu. The late Professor Porter informed me of the occurrence of a similar accident, which terminated fatally, in this city, whilst he was a student: and whilst I myself was serving my time in the Meath Hospital to the late Sir Philip Crampton, I witnessed, in a patient whose posterior nares had been plugged by the late Mr. Rynd, a similar occurrence, when the patient's life was only saved by the greatest promptitude, and where I experienced the greatest difficulty in removing the plug from its perilous situation, *because of the non-presence* of this, in my opinion, most necessary string. The accident, most fortunately, occurred during the late Mr. Porter's visit to the ward, when, of course, plenty of assistance was at hand. Had it occurred at any other period of the day, the result, in all probability, would have been far different, as, I need scarcely say, that the patient himself was physically debarred from describing what had occurred. In addition to these grave evils, I have seen erysipelas of the face subsequent to and consequent on the plugging of the anterior nares, and very frequently I have witnessed a most unpleasant ozæna persistent for some weeks after the plugs have been removed. Fortified with such experience, then, is it, that I feel myself justified in asserting, that plugging the posterior nares should be the surgeon's "last appeal."—*Dublin Quarterly Journal, Feb.* 1862, *p.* 53.

## ALIMENTARY CANAL.

### 66.—ON TRACHEOTOMY.

By Andrew Melville M'Whinnie, Esq.

[Between the lower edge of the cricoid cartilage and the upper border of the isthmus, a space exists in many subjects covered neither by muscles nor thyroid body. In a certain number, however, no such space exists at all. Occasionally an artery runs along the lower edge of the cricoid, and another along the upper edge of the isthmus of the thyroid gland, and sometimes

a small artery runs vertically between these two. Sometimes a congeries of veins occupies this space. Still these obstacles are rare and trifling compared to those met with lower down towards the sternum.]

We learn from surgical anatomy that, in an operative point of view, the situation immediately below the cricoid cartilage is a most desirable one. Its advantages were pointed out by Baron Boyer, and it has since his time been frequently selected by surgeons of eminence in this country.

With regard to operations on this or any part of the respiratory tube, simplicity in the construction of the instruments to be employed is very desirable. The same remark applies also to surgical apparatus generally, for emergencies in other regions of the body; the anatomist well practised in the use of the scalpel is glad here to lay aside complicated instruments, to return to those which are most simple and ordinarily within reach.

In most operations undertaken for the relief of dyspnœa, anæsthetic agents are inadmissible. The instruments required are simple and few—namely, a fine narrow scalpel with thin ivory handle and forceps, a stout hook, with proper canulas or elastic tubes. One or two efficient assistants, provided with retractors, should be ready carefully to keep the parts asunder as they are separated by the operator. After the division of the integuments and fascia has been effected, the thin ivory handle of the knife, assisted by the nail of the left forefinger, which feels for any irregular artery, will make its way safely between the vessels, muscles, and other textures, whilst the operator carefully keeps to the middle line, which, together with the proposed extent of the outward incision, may have been previously traced on the skin with ink. The Dublin surgeons lay claim, and I believe deservedly so, to the introduction, as far back as the middle of the last century, of the hook to facilitate bronchotomy —an indispensable aid, without which no operation on the windpipe should be undertaken. I am convinced that we have seen patients lost from the surgeon not making use of this simple instrument; for could the trachea, in spite of the bleeding, have been at once seized, raised above the pool of effused blood, and quickly opened, especially in young people, the hemorrhage, so alarming and embarrassing from the venous congestion, would have ceased, at the same time that the dyspnœa which occasioned it would have been relieved on the free admission of air. A hook, single or double, serves as soon as the trachea has been fairly exposed, to raise, steady it, and bring it forward, whilst the requisite incision is being made to receive the canula, as well as during its introduction.

The bronchotomy hook should be of much greater strength

than the ordinary tenaculum. In reference to this point, Mr. Jowers, of Brighton, observes to me that in the difficult operation in the case of contracted neck following cut-throat a tenaculum was used to seize the trachea, but unfortunately this instrument was too slender to hold the constantly moving part at the bottom of a very circumscribed space, and the patient died before a sufficiently strong hook could be procured. For such purposes, the form of hook, combined with a director, as designed by Dr. Edwards, of Cheltenham, figured and described in "Druitt's Surgery," is well adapted, and I believe has met with very general approval. The same fixedness in the staff of Dr. Edwards's instrument, as he observes to me, renders a security in those convulsive movements of the trachea that we have so much to dread whilst we operate: "Staff and knife go up and down together with those tracheal movements which otherwise would of themselves expose vessels or other parts to danger with an unprotected knife."

Should there unfortunately be a flow of blood into the trachea, the hook is again of essential service; for by still retaining his hold with that instrument the surgeon is enabled to command and keep in sight the orifice that he has made, and by enlarging it freely and without delay, affords perhaps the only chance of saving his patient. In the "Mémoires de l'Académie Royale de Chirurgie" it is recorded that, an alarming effusion of blood having taken place into the tube during the operation of tracheotomy, Vigili, of Cadiz, with presence of mind, immediately enlarged his incision by slitting up several additional rings. The extensive aperture thus made gave a ready egress to the blood filling the air-passage, the expulsion of which, like any other foreign matter, was favoured by inclining the head of the patient forward and downward. This inclination of the neck forwards converts, especially in young people, the simple slit in the tracheal rings into a gaping orifice, favourable for the evacuation of their contents.

Dr. Gibb informs me that the above good practice was followed recently under his own eye by a surgeon, who immediately, and instinctively as it were, enlarged the incision he had made into the trachea, when the blood was at once forcibly and safely ejected—a measure still more likely to be effective than the example of presence of mind amd devotedness exhibited by M. Roux, who saved his patient from impending asphyxia by applying his lips to the wound, and by forcible inspirations sucking out the effused blood.

The hook is also of great assistance during the restlessness of the patient and his struggles for breath, in fixing the respiratory tube in the event of its being deemed a proper precaution to remove portions of any of its rings. An eminent contributor

to the "Medico-Chirurgical Transactions" admits that on one occasion a sufficiently free opening was not in this way made into the windpipe, and, in the absence of proper attendance, a fatal result was the consequence. It must be a maxim, especially when an artificial tube is not employed, that the aperture in the air-passage should be in communication the most direct possible with the free external wound, not only for the easy passage of the air, but for the ready escape of all irritating matter, and for the cleansing of it away; we may in this way likewise prevent emphysema, which we have known to cause death in more than one instance during tracheotomy.

The Baron Dupuytren, in his clinical lecture after the removal of a haricot-bean from the trachea of a little girl, laid great stress too on the importance of not at once approximating the edges of the wound for fear of bringing on emphysema. At first, the cellular tissue will be permeable, and afford a ready passage to the air; but, at the end of some days, glued by the inflammation and rendered compact, this becomes no longer possible, so that the healing of the wound may now be hastened by bringing together its edges. It is certain that where there has been no disturbance of the cellular texture by previous dissection, and there is, therefore, direct communication between the air-passage and the external gaping wound, as in cut-throat, the occurrence of emphysema is comparatively rare.

Trocars of various kinds we have all known to answer their purpose, but they are not always at hand in emergency, and are now rarely used. Even in our large hospitals, commanding as they do apparatus of every description, they appear to be in great measure abandoned. We are acquainted not only with cases proving the difficulty and failure in attempts to introduce them, even in good hands, on account of the occasional smallness of the windpipe, its extreme mobility, and the resistance offered by ossification; but we also know of even fatal consequences from their employment. I am told by a gentleman, that in an instance which recently occurred in the metropolis, the trocar unfortunately missed the trachea, and passing close to the subclavian artery and œsophagus, penetrated the pleura, and caused eventually fatal inflammation of that membrane.

In the belief that the record of untoward circumstances occurring in these as in other surgical emergencies should not be withheld, if they conduce to future care and caution, a well-known London surgeon confesses to me his own bitter and disastrous experience of the use of the trocar on an occasion which, inasmuch as the effects were directly fatal, was more tragical than the last instance. He was called to a woman suffering under acute laryngitis. In endeavouring to perforate the windpipe with a trocar, the instrument, during the violent

convulsions of the patient, was forced into some wrong direction —perhaps transfixing the trachea,—when emphysema instantaneously appeared; the whole neck and face at once became enormously and frightfully swollen by being blown up, and suffocation immediately ensued. It is needless to add that the distress to the operator caused him to renounce the use of the instrument for the future.

Where foreign bodies are ascertained to be lodged in the lower part of the windpipe, we are usually enabled, cautiously and deliberately, by careful dissection under chloroform, to expose the trachea low down to a considerable extent, in order to make the very free opening into the tube essential in such cases. Here, in the absence or intervals of very urgent symptoms, time is allowed to avoid any vessels, and effectually to control all hemorrhage, before the rings of the tube which been thoroughly exposed and laid bare are incised from below upwards. We trust to a forcible expiration alone for the expulsion of the foreign substance through the aperture, which may here include some five or six, or even more, of the tracheal rings. The treatment of cases of this kind has often reflected the greatest credit on surgery. But in the large majority of cases of dyspnœa, where the symptoms are pressing and desperate, the surgeon is compelled to act more promptly: the use of chloroform is out of the question; time is not permitted for a delicate dissection amongst important parts; and, regardless of hemorrhage, he is obliged to proceed with his operation. It is therefore of the greatest moment to consider and determine at once which is in the greater number of emergencies the most eligible spot.

The opportunities of observation and experience long enjoyed in no inconsiderable field have enabled me to adduce some evidence in favour of the selection of the upper part of the trachea as being, as before stated, a most desirable situation—that indeed which, as in the first case related in this paper, the operator was compelled to chose. This portion of the trachea, at the same time that it is nearest to the surface, is also that which is most free from obstacles to its approach, and, except where foreign bodies are lodged near the bronchi, is shown to be most safe and efficient. Mr. Lawrence, in his lectures published more than thirty years ago, gives it a still greater preference, for he observes "that by making a perpendicular division of the cartilaginous rings immediately below the cricoid cartilage, we procure an opening not only adequate to the purpose of respiration, but free enough for any purpose for which the operation of tracheotomy may be necessary, including even the presence of extraneous substances in the air-passages." "The operation," he adds, "is not one of great difficulty, and we can hardly wound any part of importance."

Should the space so obtained in this situation be not sufficiently ample, and risk be apprehended from cutting the rings below, the scalpel may be directed upwards through the cricoid cartilage with advantage, thus converting simple tracheotomy into the operation (first proposed by M. Boyer) of crico-trachéotomie—a *procédé* which has frequently been adopted by English surgeons. An extension in this manner of the cut from the trachea through the cricoid cartilage enabled one of the surgeons of the Hôtel Dieu to extract a button mould which had become lodged in the left ventricle of the larynx; and the museum of St. Bartholomew's Hospital contains a preparation showing that the artificial opening so procured has been further enlarged, with advantage, by the removal of a segment of the cricoid cartilage.

Hitherto the isthmus has been referred to mostly in its hypertrophied state, in connexion with operations undertaken for the relief of dyspnœa. In its normal condition, it lies over a varying number of tracheal rings, usually upon the second, third, and fourth; but it may consist of a very narrow slip, or cover nearly the whole of the front of the trachea down to the sternum. Seldom, in its natural state, is there any discernible projection of this part, such as I perceive in the bust of Cæsar, amongst the Townley marbles before adverted to. Although it is desirable to leave it intact, too much importance, perhaps, has been attached to it as obstructing the progress of operations. No case has come under my notice where it has occasioned difficulty; and I have seen dissections showing that, although included in the incisions in tracheotomy, no bleeding of any consequence had ensued. Sabatier considered that a division of this part was of no moment in the mesial line. If necessary, this central portion may be partly detached and pulled down in operations upon this part of the trachea. The isthmus, as my colleague, the late Mr. W. P. Ormerod, remarked, is not so firmly adherent to the trachea at its upper and lower edges as to prevent its being scraped from its attachments there with the handle of the knife.

The following abstract is from Hyrtl's observations, which especially relate to the vessels of the thyroid body, and are practical and important.

The professor asserts that it is untrue that the arteries of the thyroid gland freely communicate with each other; neither do those of the left side anastomose freely with those of the right; nor do the superior anastomose freely with the inferior. In the fœtus, up to the end of the third month, the thyroid gland consists of two distinct portions, which afterwards gradually become united in front of the trachea; so it is not difficult to understand why there should not be any very free communica-

ion between the arteries of the opposite sides. The veins ommunicate much more freely with each other than the rteries.

That an orifice made through the tracheal rings, immediately elow the cricoid cartilage, is favourable for the constant wear- ng of an artificial tube is exemplified in Preparation No. 12, eries 25 (Pathological), St. Bartholomew's Hospital Museum. he almost complete closure of the glottis necessitated the ontinued employment of the canula, through which respiration as easily carried on to the time of the patient's death, twelve ears afterwards.

Of artificial tubes I shall here scarcely speak. In some cases t is well known they are readily borne, but in others it is diffi- ult, or even impossible, to retain them. Like many other foreign odies, the amount of irritation they produce varies con- iderably.

M. Dupuytren, on the occasion of removing a fish-bone, an nch and a quarter in length, from the upper part of a woman's arynx, by means of a forceps introduced through the fauces, emarked on the extreme difference in the sensibility of the ame organ in different individuals. The irritation, in general o violent where foreign bodies are present in the air-passages, as here so inconsiderable, that the patient had been but little nconvenienced by the bone remaining fixed in the throat, ithin the epiglottis, for eight or ten days.

One patient will wear either a metallic or elastic tube per- anently; another will altogether dispense with it, respiration eing then wholly carried on through a persistent opening in ne air-passage.

A preparation in the Sussex County Hospital shows the upper perture of the larynx nearly obliterated just below the chordæ ocales by a firm gristly substance. The ring of the cricoid rtilage is so contracted that it is reduced to a mere chink later- lly. Immediately below this tracheotomy was performed, and ne patient, during the last few years of his life, breathed ntirely through the artificial opening in this situation. During is period the patient came repeatedly to the Brighton Hos- ital to have the edges of the orifice pared, and in this way y friend, the late Mr. John Lawrence, maintained the assage free without the necessity of the man's wearing any nstrument.

As regards the construction of a tracheotomy tube which may e required to be worn permanently, I may just mention that I ave seen one well adapted to its purpose, the contrivance of Ir. Anderson. He politely desired a lady to call upon me earing one, and which she had done for two years, in the achea, close to the cricoid cartilage. This instrument, which

afforded her great comfort, combines with it the advantages also of a respirator, for the silver canula is furnished with a shield, or helmet pierced with small openings.—*Lancet, Feb.* 8, 1862, *p.* 143.

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## 67.—ON STRANGULATED HERNIA.

By Thos. Bryant, Esq., Assistant Surgeon to Guy's Hospital.

[Previous to the discovery of chloroform, our aids to the taxis were opium, bleeding, and the warm bath.]

The practice which has now eclipsed in value the means already mentioned is the administration of chloroform; it doubtless possesses in itself all the advantages of the older forms of practice, and none of their evils; under its influence, if the taxis is to succeed, the slightest manipulative efforts will suffice; if the taxis fails, no other path for reduction but by operation lies before us. By its use delay is not occasioned, symptoms are not masked, as may be done by opium, and the danger of long-continued and repeated taxis is annulled. Amongst the seventy-eight instances of reduction by the taxis of an inguinal hernia which I possess, fifteen were completed under the influence of chloroform; and it must be remarked that in nearly all these instances all other means had been attempted and had failed, reduction having been effected by the surgeon who had been called down to perform herniotomy. In none of these cases did any bad or fatal result take place; indeed, convalescence was speedily re-established.

If then, such success as has been already quoted can be relied on, viz., the reduction by the taxis under the influence of chloroform of nearly 20 per cent. of those cases in which all other means had been employed and had entirely failed, it appears to be a natural and fair conclusion to which we are at once led, namely, that we should, in all cases of strangulated inguinal hernia of any standing, primarily employ the means which have been proved to be so successful, and not waste time by such delay as necessarily follows the use of other remedies when we possess one so incomparably their superior, which embodies in itself all their virtues and none of their evils.

*On Strangulated Inguinal Hernia.*—One third of all the cases of strangulated inguinal hernia require operative relief. This conclusion is unmistakable, and is a corollary to the assertion, that two-thirds can be reduced by means of the taxis; this number also, I believe, would be materially lessened if chloroform could be primarily used in all instances.

I possess the notes of 44 cases in which herniotomy has been performed; 23 of these, or 52 per cent., proved fatal.

In 9 of these the *sac was not opened*, of which 2 only, or 22 per cent., died.

In 35 the *sac was opened*, of which 21, or 60 per cent., died.

Comparing the two classes of cases, it would appear that those in which the sac was opened are by far the most fatal, the proportion rising from 22 to 60 per cent., being nearly three times as great.

Reviewing the cases in which the *sac was not opened*, two were in infants, patients of Mr. Cock.

[The following conclusions are drawn from a large number of cases, and are the concluding portion of a long and able article on hernia :]

1. That of all the cases of strangulated inguinal hernia, 64 per cent., or about two-thirds, are reducible by the taxis, the remaining third requiring operative relief.

2. That in at least 19 per cent. of the cases returned by the taxis success has been obtained by the influence of chloroform when all other means had been attempted and had failed.

3. That death takes place in 3·8 per cent. of the cases reduced by the taxis, and in 52 per cent. of the cases operated upon.

4. That of the cases of strangulated inguinal hernia—

24 per cent. are "congenital."
5 ,, "recent," and strangulated in their first descent.
70 ,, "old," that is, have existed for years.

5. That in cases of *inguinal hernia becoming strangulated on their first descent*, or "*recent*" cases, reduction by the taxis is seldom accomplished; that the sac is, as a rule, required to be opened, and that a fatal result is unfortunately the rule.

6. That in cases of *strangulated "congenital" hernia*, more than half are reduced by the taxis; that in 85 per cent. of the cases requiring operation the sac will require to be opened and a fatal result ensues in about 38 per cent.

7. That in cases of "old" hernia, that is, where the hernia has existed for years (twenty years being the average), 70 per cent. are reduced by the taxis; in 77 per cent. the sac will require to be opened, and 50 per cent., or half the cases operated upon, terminate fatally.

8. Reduction by the taxis is most successful in "old" strangulated hernia, reducing more than two-thirds; one half of the cases of strangulated "congenital" are also amenable to this treatment, and in the "recent" cases it is seldom successful.

9. That herniotomy is most successful in "congenital" her-

nia, about two-thirds recovering; half the cases of "old" hernia operated on recover; but this operation is almost always fatal in "recent" cases.

10. That in herniotomy for inguinal hernia the sac is required to be opened in 80 per cent., and unopened in 20, and that death takes place in 22 per cent. of the latter class of cases, and in 60 per cent. of the former.

The latter conclusions, brought out by the careful consideration of the cases of strangulated hernia requiring herniotomy, renders the second a point of greater importance. In the cases of herniotomy it has been shown that more than half the cases operated upon proved fatal; it has also been shown that in the cases reduced by the taxis success had been obtained in at least 19 per cent. by the use of chloroform when all other means had been attempted and had failed. Indeed, in all these instances the attendance of the operator had been requested. It will hardly be thought an unfair thing to consider these fifteen cases so treated as cases rescued from the danger of herniotomy, and a large proportion of them consequently from death. If the use of chloroform as a means of securing the reduction of a strangulated hernia had not been recognised, the whole of these cases would have been operated upon; and counting these 15 cases together with the 44 which required herniotomy, 59 would have been the figure upon which this paper would have been based. It may fearlessly, then, be stated that chloroform has rescued at least 25 per cent. from the dangers of herniotomy. No mean triumph, indeed, and certainly sufficient to encourage the practice which I trust some day to see general, namely, the primary treatment of all cases of strangulated inguinal hernia (not very recent) by chloroform, such a practice being doubtless the safest, most speedy, and effectual in securing the successful application of the taxis.

*On Strangulated Femoral Hernia.*—Femoral hernia is less common than inguinal by 74 per cent.; as a rule, it makes its appearance between 50 and 70 years of age; it is far is far more liable to strangulation, and to strangulation on its first descent, than inguinal, 44 per cent. of the cases of strangulated hernia being of this nature; and that when strangulated, 73 per cent. require herniotomy, not 27 per cent. being reducible by taxis.

It has been stated that scarcely 27 per cent. of these cases of strangulated femoral hernia are reducible by the taxis, this fact standing in marked contrast with the cases of strangulated inguinal hernia, in which two-thirds, at least, are reducible by such means. Out of 142 cases of strangulated femoral hernia, 38 only are arranged in this class; 4 of them died, or 10·5 per

cent., the mortality of these cases being nearly treble that of inguinal hernia.

Analysing the 38 cases, it will be seen that—

10 cases, or 26·3 per cent., were of "recent" origin; that is, were strangulated on their first descent; all recovered.

28 ,, or 73 ,, were of older date, having existed months or years; 4 of them died, or 14 per cent.

One of the successful instances had been operated upon the same side one year and a half previously for strangulated hernia. The warm bath and the taxis were the chief means employed in these cases, opium also having in some few instances been administered. In one only was reduction successful under the influence of chloroform when other means had failed. This point is worthy of remark, more particularly when contrasted with the success obtained by the use of these means in inguinal hernia; the taxis, it has been shown, is by no means successful in reducing a strangulated femoral hernia, and chloroform is also a much less valuable adjuvant in securing such an end than it is in inguinal. The taxis should be very cautiously applied in cases of strangulated femoral; force is far more dangerous in this form than it is in the former, although in both it is indefensible. If chloroform is given, a very slight manipulation will, as a rule, suffice; powerful pressure in both forms cannot be too strongly reprehended.

[It is very necessary to make a distinction between the cases of femoral hernia, which become strangulated on their first descent, and that large class of cases in which strangulation has only appeared months or years after the hernia has first taken place. These cases differ at every point, and the more that difference is looked for, the greater appears to be the necessity for the distinction. The following summary shows the distinctions clearly:]

*Conclusions concerning cases of* RECENT *femoral hernia becoming strangulated.*

1. That they form 21 per cent. of the whole number of cases of strangulated femoral hernia, and that 45 per cent. are fatal.

2. That 32 per cent. of these cases are reducible by the taxis, and with general success.

*Conclusions concerning cases of* OLD *femoral hernia becoming strangulated.*

1. That they form 78 per cent. of the whole number of cases of strangulated femoral hernia, and that 30 per cent. are fatal.

2. That 25 per cent. of these cases are reducible by the taxis, and that 14 per cent. of these die.

3. That herniotomy is required in 68 per cent., and of these 66 per cent. subsequently die.

4. That of the cases operated on, the sac was opened in 38 per cent., death following in these cases in 87 per cent.

5. That the sac was not opened in 62 per cent., the death rate in these falling to 54 per cent.

3. That herniotomy is required in 75 per cent., and that death follows in 36 per cent.

4. That of the cases operated on, the sac was required to be opened in 62 per cent., death taking place in 45 per cent.

5. That the sac was not required to be opened in 58 per cent., the death rate in these being only 22 per cent.

Comparing these two tables of conclusions concerning the cases of strangulated "recent" and "old" femeral hernia which the facts previously given unquestionably authorise, the following deductions appear necessarily to follow.

1. That at least one-fifth of the cases of strangulated femoral hernia are "recent," and that these cases are 50 per cent. more fatal than the cases of strangulated "old" hernia.

2. That the taxis in recent cases is the most successful, and that it is seldom followed by a fatal result.

3. That herniotomy is less seldom required in these "recent" cases, but that when it is, it is nearly twice as fatal.

4. That the sac is not required to be opened so frequently in "recent" as in "old" cases, by at least 28 per cent. The proportions between the cases in which the sac was opened or not in the two classes of cases being exactly reversed.

5. That where the sac is opened, death takes place more frequently in "recent" cases by at least 33 per cent., or one-third; and in "old" hernia the mortality is twice as great.

The practical deductions to be gained by the consideration of these facts are not unimportant. They increase our anxiety to return a "recent" strangulated femoral hernia by the taxis and thus to do away with the necessity of herniotomy. They also show us that the taxis should be employed more cautiously in "old" hernia. They satisfactorily prove to us the benefit of operating without opening the sac; the difference in the mortality, both in "recent" and "old" cases, falling in the former 33 per cent., in the latter 23 per cent. The cases in which the sac was opened being in the "old" twice as fatal.

It must be observed, also, that the facts revealed by the analysis of these cases are by no means calculated to give the most favourable aspect to the operation without opening the sac, as it includes the cases of several of my colleagues, who are not converts to the benefits of the practice, and who invariably open

the sac. It is fair to believe, then, that if the result of the practice as given is favourable comparatively, it would be still more apparent if the same practice had been carried out in all cases; as it is, however, it appears to be strongly in favour of the minor measure, whether we consider the cases as a whole, or divided up into what I maintain to be the only correct plan, the "recent" and "old" cases of strangulated hernia. To classify these two classes of cases together evidently misleads, and I believe all surgeons who will compare the two tables previously quoted, will at once understand the wisdom of their separation, and also the necessity.—*Guy's Hospital Reports. Vol.* vii, 1861, *pp.* 49, 60, 62, 65.

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## 68.—ON OPENING OR NOT OPENING THE SAC IN STRANGULATED HERNIA, WITH PRACTICAL CONCLUSIONS.

By Thos Bryant, Esq., Assistant-Surgeon to Guy's Hospital.

[From an analysis of a great number of cases at Guy's Hospital, the author, in the previous part of the paper, shows most conclusively the superior success attending operations in which the sac is left unopened. He says:]

Taking the cases of inguinal hernia in which herniotomy was required, death took place in 60 per cent. of the cases in which the sac was opened, and in 22 per cent. only in which it was left alone; the difference being nearly 40 per cent.; the cases in which the sac was opened being nearly three times as fatal as were those in which it was left untouched. In femoral hernia the same conclusion appears to be equally manifest, the death rate in the two cases differing 20 per cent. When the sac was opened, the mortality being 50 per cent., and when left unopened only 30 per cent. If, however, in the cases as a whole, this conclusion is tolerably clear, when the division of the cases into the "recent" and "old" is made, it becomes still more prominent, and the value of the minor operation stands out more boldly. In strangulated "recent" inguinal hernia, the difference in the operation does not appear to have much influence, a fatal result too frequently takes place in both. But in the cases of strangulated "old" inguinal hernia, the difference is immense, the death rate descending from 60 per cent. when the sac is opened to 16 per cent. when it is left untouched; the difference being 44 per cent., or nearly four times as great; and in congenital hernia the practice is equally beneficial. In femoral hernia the same conclusions are apparent. In "recent" cases, when the sac is opened, the mortality is 87 per cent., and when unopened but 54 per cent. In "old" cases, where the contents

of the sac were exposed, the mortality was 45 per cent., and when not, but 22 per cent.; the mortality in the former being twice as great.

These facts appear strong, and argue all one way, and that is against the practice which demands more to be done in an operation than is absolutely essential; it may, I think, be certainly said that in all cases of inguinal, femoral, or umbilical, recent, old, or congenital—the cases are more successful when the sac is not opened, and, as a consequence, the surgeon is hardly justified in taking an unnecessary step by opening the sac when no benefit, but some harm appears to result.

It may be a satisfactory thing on the part of the surgeon to know the condition of the hernial contents, but practically such knowledge is of little use; and unless it can be proved that such an inspection is of any value, the opening of the sac must be regarded as unnecessary.

In another place, it was fairly shown that in no single fatal case could the opening of the sac have had the slightest influence in retarding or preventing the fatal result. Thus the dead, by a negative argument, aid in recommending the minor operation. The tables given certainly argue in favour of not opening the sac, and the fatal cases told also the same tale; the conclusion therefore remains to be drawn, that if no good result can be shown to take place by the opening of the sac, that death is more common, and cannot be retarded or prevented by such a practice—the rule for the operator should be to attempt the lesser operation, feeling that if that fails he can always resort to the major measure.

Many of the advocates for opening the sac confess that in a large inguinal hernia, and in umbilical, the danger to life mainly depends upon the amount of manipulation that the exposed strangulated bowel undergoes, and even express an opinion that in these cases the practice of opening the sac is to be condemned. In cases of femoral the same injury must certainly take place, and although the bowel is, as a rule, less in extent, the evil must be the same in kind, although perhaps less in degree. In surgery, the rule for the operation is surely this, that no step should be taken unless an absolute necessity exists; that is, unless some positive advantage can be obtained. In opening the sac, in all cases of strangulated hernia, this positive good is still undeclared; and as the weight of evidence tends to the opposite line of practice it must be condemned.

*Practical Conclusions.*—The careful consideration of the pages which have just been concluded have naturally some positive tendency in fixing or indicating the practice which is to be adopted in the treatment of strangulated hernia.

*In Inguinal Hernia.*—In the inguinal, the fact which appears

so be most prominent is the success which follows the cautious application of the taxis; and if that taxis is employed under the influence of chloroform, very general success may reasonably be expected. In the earliest hours of strangulation, success may follow the taxis without such means; but if many hours have passed away, and the symptoms of strangulation are manifest, chloroform should be employed. Baths, opium, and ice have been shown to be unnecessary, although in former times they have been most serviceable. But as all the advantages which these means afford are embodied in the use of chloroform, and all the evils of their use have been dispensed with, the primary employment of the means which has been so beneficial cannot be doubted. In cases, therefore, which have been strangulated many hours, let chloroform be at once administered; and when the patient has been fully brought under its influence, the taxis should be resorted to; the surgeon applying it with the confidence conferred by the knowledge that, in extreme instances, success has followed its use when all other means had failed, and with the reasonable hope that in less severe cases success must follow. I am so far impressed with the value of this agent in reducing a strangulated inguinal hernia, that I believe there are few cases in which success will not be obtained, if the patient is brought completely under the influence of the anæsthetic, and the taxis is fairly applied. The force required to reduce an inguinal hernia under the influence of this anæsthetic is comparatively nothing, the gentlest manipulation proving sufficient. In an earlier page it has been shown that, by its use, in at least 20 per cent. of the cases reduced by the taxis success had been obtained when all other means had been attempted and had failed; and, with this success, it is not unfair to believe that in other cases less severe a greater one can be secured.

In the strangulation of "recent" inguinal hernia, the extreme fatality of the operation of herniotomy renders the necessity of its reduction by the taxis more urgent; and the fact, that a fatal instance after reduction under the influence of chloroform is not recorded, is an encouragement to its use. In "old" hernia, also, the fact that a large proportion of its cases are successfully treated by the taxis renders this treatment by chloroform more valuable, as it raises our expectation that the cases for operation may be diminished, and that few will require herniotomy.

If herniotomy is required, what operation, therefore, should be selected? The tale told in a previous page is tolerably clear; operate, if possible, without opening the sac. The difference of mortality between the two cases have been shown to be great (50 per cent.); and although it is true that in a

large proportion of the cases the sac is required to be opened to allow of the reduction of its contents, that point tells nothing against the practice which advises primarily the minor operation.

The largest proportion of strangulated inguinal hernia being of the "old" kind, that is, taking place in subjects who have had a rupture for twenty or more years, may perhaps explain the fact that so many cases are irreducible without opening the sac. In these instances the omentum is, as a rule, down and adherent, the strangulated intestine being generally situated behind or within an omental sac. In such cases, it is not difficult to understand how it is necessary to expose the parts, and to unravel them, to allow of the reduction of the strangulated bowel.

*Treatment of Strangulated Femoral Hernia.*—In the treatment of inguinal hernia, it has been already stated, that the hope with which the surgeon proceeds to reduce the tumour by the taxis is very great, and that it becomes greater when the patient has been brought under the full influence of chloroform. Indeed, it has been written that there are few cases which are believed to be incapable of reduction by such means. In the treatment of strangulated femoral hernia a very different tale has to be told: but few cases are reducible by the taxis, and the mortality of these is very great. The use of chloroform in such instances also cannot be so highly recommended. The taxis, as a means of reducing a strangulated femoral hernia must be looked upon with considerable suspicion, and indeed I believe that treatment to be only applicable to a small class of cases.

In the strangulation of a "recent" femoral hernia it has been shown to be the most successful, a larger number of these cases being capable of reduction by the taxis, and with a less fatal result than in the "old." The great mortality also of these "recent" cases after herniotomy renders the treatment by the taxis of greater value, and increases our anxiety to reduce the tumour without an operation.

In strangulated "old" femoral hernia, but few cases have been shown to be successfully treated by the taxis, and of these the mortality is very great; the operation of herniotomy is also less fatal; it becomes therefore a question whether it would not be better to put aside the taxis altogether in those cases, and operate at once, than run the risk of injuring the strangulated bowel by the taxis. The danger of the taxis in femoral hernia is always great, and the greatest caution should be employed in its application. Violence cannot be too strongly reprehended. The mortality of the cases after reduction helps to enforce this

fact, and to insist upon the moderation with which it should be applied.

In the early hours of a strangulated femoral hernia, and more particularly in "recent" cases, the taxis may be employed, but this only with extreme caution and moderation, a few minutes only being sufficient if success is to be obtained; a longer continued period of pressure must do harm.

If many hours have elapsed after strangulation, and the case is of an "old" character, the taxis must be dispensed with, or at any rate employed but gently when the patient has been brought under the influence of chloroform preparatory to an operation. In some few cases it may then succeed; but the hope of success is but slight.

When herniotomy is required, the operation without opening the sac appears to be the most successful, a difference of 20 per cent. existing between the two classes of cases. In strangulated "recent" examples, this difference becomes greater, the majority of the cases being relieved by this operation; the mortality sinking from 87 to 54 per cent. In strangulated "old hernia" the same practice is indicated, the mortality in the cases in which the sac is opened being 45 per cent., and when not opened only 22 per cent. The operation of not opening the sac is thus clearly the most successful, and should be carried out whenever applicable.

The not opening of the sac is the chief point to be attended to. If the hernia can be reduced without opening the fascia propria, as suggested by Mr. Gay, and recommended by Mr. Birkett in his 'minimum' operation, so much the better; but I imagine the difference of a layer of fascia more or less can have no influence on the result of an operation, unless it be to expose the hernial contents. The object is not to expose or to manipulate an injured and probably an inflamed bowel; and, carrying out this principle, the line of incision, or its depth, may be left to the fancy or discretion of the operator.

*Umbilical Hernia.*—In this variety, the same principles of treatment which should influence our practice in the former cases appear applicable. Reduction by the taxis is on the whole successful, and in obstinate cases the use of chloroform should be employed. When herniotomy is required, if the hernia can be returned without opening the sac, the attempt should be made, the mortality of these cases after operation, as a rule, being very great; indeed, the only successful example which I have quoted is the one in which the contents of the sac had not been exposed. If this is impossible, the practice followed in the case quoted might be followed, namely, the opening of the neck of the sac just sufficiently far to allow

of the division of the stricture, but not the exposure of the hernial contents. By such means the real danger of opening the sac, namely, the exposure and manipulation of the inflamed bowel, is done away with, and a greater success may consequently be anticipated. In all cases, however, the not opening the sac would appear to be the best; and I am at a loss to know a single reason why this rule should not be carried out. When reduction without exposing the interior of the sac cannot be effected, the sac must be opened; but such a step must be regarded as an evil, and as being unnecessary if reduction can be effected without it.—*Guy's Hospital Reports, Vol.* vii., 1861, *p.* 79.

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## 69.—ON THE TAXIS IN STRANGULATED HERNIA.

By Frederick Le Gros Clark, Esq., Surgeon to St. Thomas's Hospital.

[The patient was about 30 years of age and had had hernia for some time. He had worn an ill constructed truss.]

The symptoms of strangulation were, at first, very acute, and the tumour very tense and tender; he had vomited. The warm bath gave relief, and allowed of the taxis being employed without much pain; but the House-Surgeon, failing in reducing the rupture, ordered ice to be applied, and sent for me. I found the external aperture, through which the rupture protruded, large and prolonged over the sac, and was surprised, considering the tightness with which the neck was girt, that the taxis occasioned so little pain. For some time no effect seemed to be produced; yet the circumstance I have just mentioned encouraged me to persevere much longer than it is my custom to do. The patient vomited at this time; and when I was about to relinquish any further effort, a gurgling sensation induced me to continue. I also changed my position to the opposite side of the patient; and after bidding him try if he could accomplish what I could not, I ultimately succeeded in effecting the reduction. A considerable quantity of chloroform had been administered, but without any apparent effect.

There is nothing uncommon in the above detail, and yet there are points of practice illustrated which are of great importance in your surgical treatment of hernia:—1. Under what circumstances and for how long should the taxis be persevered in? Rough manipulation is to be deprecated under all circumstances; and I believe to prolong the taxis when the symptoms are urgent and the tumour is very sensitive, is fraught with much risk, and is not unfrequently the cause of failure in success of a subsequent operation. But, in instances such as the present,

where the strangulation was recent, and the local suffering scarcely appreciable, though the tightness of the stricture and the sympathy of the stomach left no doubt of the existence of strangulation, it is right to persevere. It is proper in all cases, but especially as in this, where the neck of the tumour is large, to use the fingers and thumb of one hand to direct the hernial contents towards the abdomen; and it is well to vary the side and exchange hands, as you may thereby succeed in giving a better direction to your pressure. Moreover, you may often learn something from the patient's mode of helping himself; and it is interesting to watch with how much tact and delicacy he will apply the taxis. Change of position, also, by raising the patient's legs, and by directing him to turn on one side or the other, should not be neglected. 2. What are the signs of probable success in the taxis? Diminution in the tension of the tumour is one, and a gurgling sensation, as if the contents of the bowel were passing beyond the stricture, is another; though these may sometimes occur without a favourable result. When these indications are present, gentle uniform pressure will often accomplish more than manipulation. 3. When, in such a case as the above, should an operation be resorted to? I do not think there is the same urgency in the absence of all tenderness in the tumour or pain in the abdomen, as where these symptoms are present, especially when such tenderness and tension have been in a measure relieved by the means employed. Yet, when the general symptoms are urgent, it would not be wise to delay the operation, even should there be an amelioration in the local condition; and especially so if the contents of the sac are ascertained to be intestine. It is scarcely necessary to add that these remarks apply only to previously existing ruptures, in which strangulation is recent; for the absence of pain may otherwise indicate a fatal loss of sensibility in the hernial contents.—*Med. Times and Gazette, Jan.* 25, 1862, *p.* 75.

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## 70.—ON THE RADICAL CURE OF REDUCIBLE HERNIA.

By Redfern Davies, Esq., Birmingham.

[The author commences by saying that he has followed almost exclusively the method devised by Mr. Wood. He believes it to be the most successful and least painful known. The following is the way in which he performs the operation.]

The patient lying on his back, and his bowels having been that day opened, chloroform is administered if wished for. An incision, one inch and a-half below the spine of the pubes, is then made for about three-quarters of an inch, the *integument* of the scrotum only being cut through; the lips of the incision are

now successively seized hold of, and by a blunt-pointed pair of scissors a dissection is made beneath the integument, for a space of two inches around the external opening of the inguinal canal.

The conjoined tendon is now to be felt for by the finger of the left hand, which pushes before it some fascia. The needle recommended by Mr. Wood is then carried on the finger to the external abdominal ring, through which it is to be passed for a distance of about half an inch, or it is thrust through all the soft parts above. When the point has emerged through the integument, the needle is threaded by a silver wire, and then withdrawn with the wire. The first and most difficult portion of the passing the wire is then accomplished.

The finger now seeks for the external pillar of the ring, and on it the needle, bearing a loop of the wire already introduced (*i.e.*, the wire simply bent on itself), is carried about half an inch within the canal, and all the soft parts above it are transfixed. The extremity of the needle appears on the surface of the abdomen, bearing a loop of wire, and it easily glides down the *free* end of the wire when the loop is held.

And again, upon the finger having found the internal pillar, the needle bearing the wire is carried and made to pierce the tissues above, and a little within the canal. The needle having been disengaged from the wire is lastly withdrawn.

The free extremities of the wire are then passed through an aperture in an oval piece of thickish glass (three inches long by two broad), and the loop through another aperture a quarter of an inch distant, and having been pulled together as close as can be, they are twisted over each other, which securely fastens them.

The testicles having been supported by some tow, and the parts washed, all is done.

During the day of operation some varicocele appears, which depends upon the veins of the cord being pressed upon by the disturbance of the parts and the consequent swelling, and remaining but for a few days, indicates only that the operation has been efficiently done, and requires no notice to be taken of it.

The loss of blood during the operation amounts to about half a tea-spoonful.

The wires may be unfastened on the eighth day, and removed entirely on the next. The punctures and incision from which some pus will exude, should be treated by water dressing; and when healed (in about one week's time), the patient may be allowed to get up, and is perfectly cured.

The propriety of applying a spica bandage and compress, is now a very much debated point. We know that continued pressure induces absorption, so that it is reasonable to infer that the constant pressure of a spica bandage and compress, will so act upon the recently introduced tissues in the inguinal canal

and ring, and that, eventually, there will be produced as bad a state of things as there was before any operation was attempted.

However, practically, such is not the case. In my former operations (those after Wutzer's method) I used the bandage with a graduated compress, most extensively, and though not perfectly satisfied with it, I did not find those effects produced, which might have been expected from a theoretical consideration beforehand.

Believing, however, that for a time the abdominal walls must be weaker in the inguinal region than elsewhere, and that concussions had better be guarded against, I now use a simple bandage, and by this means, cover in firmly the whole of the lower half of the abdomen.

The rationale upon which this operation acts, is, I believe, as follows:—A portion of fascia having been freed from its adjacent part is, by means of the wire, fixed in the canal and rings, so as to form a plug which prevents the gut, &c., from escaping out of the abdomen. By this means, it acts in just the same way as Wütz er's operation does; and the only difference between them is that, in Wütz er's, union is attempted between two tissues which were not intended by nature to unite; and in Wood's, parts are united (and that subcutaneously) which are accustomed to be so, naturally. Again, the rings, &c., instead of being forcibly distended, as in Wütz er's method, are made of less size, by having their pillars, &c., drawn firmly together; and kept so, by becoming united with the fascia drawn into them.

Wood's operation may be looked upon as simply gliding into another place, tissues which have a natural affinity one for another; and by this means, causing a canal, &c., which has become distended by pressure, to recover its natural calibre.

The reasons that have led me to prefer this operation, &c., to Wütz er's, even with the improved instrument I have invented, are:—Firstly, its immense superiority, as founded upon the practical observation of more than fifty cases upon which I have operated in this way. Secondly, by the consideration, that a wooden plug (even with the addition of a movable lower portion), can never adapt itself to the tissues like soft parts. And thirdly, that there is, and must be, great difficulty in inducing two surfaces to unite one with another, which were never intended to do so by nature, viz., the causing two layers of invaginated scrotal integument to adhere together.

The improved instrument above alluded to, I have already described elsewhere; but I now again figure and describe it. Where Wütz er's operation is adopted, in cases of scrotal and femoral hernia, with the tissues relaxed and the rings of large size—say capable of admitting two, three, or more fingers—considerable difficulty and disappointment is experienced in

endeavouring to effect a cure by one operation; and it has occasionally happened to others, and to myself, to be obliged to repeat the process.

From practical acquaintance with the subject on the living, and repeated trials and experiments upon the bodies of the dead, who have been effected with hernia, I have been led to believe, that the cause of such failures is not attributable to any fault in the theory of the method, but to a defect in the instrument; and upon the following grounds, submit to the decision of practical test, that they would be obviated by the adoption of the accompanying mechanical improvements.

Upon examining a case of rupture in which the operation for the radical cure has failed (supposing, of course, that it has been properly managed, together with the proper after-treatment), the rings and the canal will be found to be obliterated, probably to some three-fourths of their extent, or there may be only an aperture which will, with difficulty, admit a crow's quill; and thus, though the patient may be greatly benefitted, and with the aid of a truss, resume his duties, a *radical cure* has not been effected.

That portion of the canal and rings which have been blocked up, is invariably that which is nearest the abdominal walls. "The gut slips down behind the plug," are the terms in which both surgeons and patients express the mishap which has occurred, and the reasons for this are, I believe, as follows:—The anterior or superior layer of the invaginated integument, is subjected to, not only the pressure of a wooden plug in Wütz er's instrument, to keep it in apposition with the opposed surface of the canal and rings, but also to the direct pressure of the compressor. The compressor exerts its influence exclusively upon the parts included between it and the upper surface of the said wooden plug, and in no wise affects the posterior parts:—viz., the posterior layer of invaginated integument, and upper surface of the canal and ring, whose sole chance of being kept in apposition depends upon the accuracy with which the plug fits the canal, &c., as a whole.

The floor of the canal, &c., especially where the tissues are lax, as generally occurs in old and large ruptures, does not present in the same manner an opposing resistance to the wooden plug as does the compressor; and thus, should the two former be not very accurately adapted the one to the other, adhesion cannot even be expected to occur.

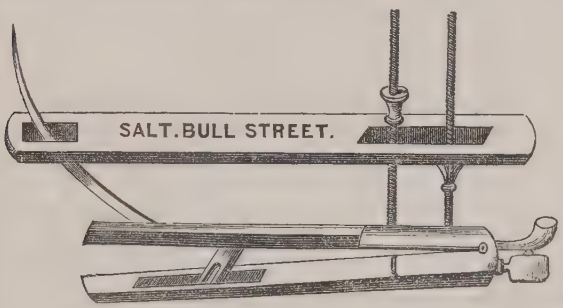
The mouth or internal opening of the canal, is funnel-shaped, with the posterior surface the more sloped; consequently, if there be a weak point it will be there, and it is sure to receive all the shocks of the gut during the process of cure.

Besides, it is evident that a *cylinder*, even closely applied to

the rest of the extent of the canal, cannot fill up its funnel-shaped mouth; but must have an interspace which will be on the posterior surface.

And again, it is not always practicable to introduce to a sufficient extent, a solid plug, which would best fit the internal ring, on account of the resistance of the other tissues to its passage; besides entailing an endless variety of such plugs.

By the adoption, however, of the principle I now propose, viz., a plug, whose lower half is capable of expanding, those difficulties are severally overcome.




A glance at the diagram will render its application at once evident; it will be seen by turning the handle of the dilating screw, and thus causing the lower half of the instrument to expand, that the pressure upon the parts included between the upper portion of the plug and the compressor, is left in exactly the same relations and conditions as in the usual instrument; but, that a force is exerted upon the posterior portion of the invaginated integument, canal, and rings, which it gently, but firmly, retains in complete apposition one with the other.

By reason of the greatest point of its expansion being at the extremity of the instrument and gradually tapering, two objects are accomplished; first, the funnel-shaped mouth and the internal opening is filled with a plug, whose sides are inclined towards its own—the invaginated integument being, as it were, modelled upon it; and secondly, the rest of the canal is, at the same time, subjected to no undue pressure.

The principle adopted by Mr. Spencer Wells, is likewise, made available, viz., having the transverse diameter of the instrument much greater than the antero posterior, whereby the shape of ring is altered, it being converted into a mere chink, and thus affording an additional security against the descent of the gut; and so leaving as small an amount of space as possible between

the opposed surfaces of the *doigt de gant* to fill up when the instrument is removed. A thin india-rubber finger-stall caps the end of instrument preventing any soft parts getting between the blades.

With regard to the metallic uprights and screws, they are so arranged that the amount of pressure exercised by the compressor, may be applied just as is required; an excess may be precisely thrown, when desired, upon the part pierced by the needle, or upon the edge of the *cul-de-sac*, by alternating the screws; or a general and equal pressure may be exercised upon all the parts included between the compressor and the plug.—*Dublin Quarterly Journal, Feb.* 1862, *p.* 60.

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## 71.—ON A NEW OPERATION FOR THE CURE OF UMBILICAL HERNIA.

By Richard Barwell, Esq., Assistant Surgeon to Charing-Cross Hospital.

[In by far the larger number of cases, umbilical hernia is of no importance whatever in infants, but in some the ring does not close, and the chance of spontaneous cure becomes less and less. Thus, in a child of two years old, with an umbilical hernia, not diminishing in size; in the not uncommon naval rupture after childbirth; and in the case of all adults, the operation to be proposed affords a perfectly safe and indeed the sole means of cure.]

There is a condition in infancy which not only warrants this operation, but renders it highly desirable, even although the hernia might very likely get well without such interference. This rupture sometimes produces, without any strangulation, an amount of colic or pain which seriously affects the patient's health; the child is constantly writhing, drawing up its legs, and screaming; it will not suck quietly, is frequently sick, and gets constantly thinner; the abdomen is hard and tense; the hernia increases in size. These symptoms resist, or are alleviated only for a very short time by, medicinal treatment. Such condition is, I believe, produced either from a portion of the colon itself having passed out of the abdomen through the navel, or from there being included in the hernia some piece of the omentum so near to the colon as to bind down that intestine. It is all very well to talk or to write about constantly keeping back such a hernia, and never allowing its protrusion; in practice, we know that such an indication cannot be fulfilled. A surgeon may fasten the bandage perfectly well, but in half an hour or so the child cries, drags in the belly, strains, or makes some other sudden movement, and out comes

the hernia, when the screaming and kicking recommence, aggravated probably by the nurse's attempts at bandaging. It is for such cases as these that I recommend the operation in infancy, rather to save the constant pain and restlessness of the child, the daily and nightly wear and tear of the mother, than with the mere view of curing the hernia. The infants upon whom I have operated for this very cause slept well, fed well, and gained flesh from the day of the operation.

The method of performing the operation in sufficiently simple; but a few details should be known. When the sac has been slit up, so as to expose the crevice-like opening into the abdomen, the peritoneum is seen passing into it, crumpled up into folds, exactly as a pocket handkerchief whose middle had been crammed into a small keyhole would be puckered. At the upper end lies the tough remnant of the umbilical vein, and all around outside the sac is a quantity of cellular tissue, more or less loaded with fat, covering and concealing the white tendinous edges of the ring. It is desirable to clear away some of this encumbering tissue to bring into sight the place where the needles are to go, and also to present, what may otherwise happen, the mere sewing up of this loose tissue, leaving the real opening unclosed. In cases where the hernia is large, and this material plentiful, it is better to cut away nearly all that tissue, and of the sac also (which I have found to be a perfectly harmless proceeding), otherwise there will be included within the wire, and, perhaps, squeezed into the opening, a lump of soft material that will retard, or altogether prevent healing. All this having been properly arranged, the sutures are to be placed—two, three, or even four may be used, according to the size of the ring. In children, I have, except once, found two sufficient. A Price's needle is the most convenient instrument. Sufficient distance is to be left between the edge of the opening and the entrance of the needle, and a considerable thickness of tissue must be included in the sutures. It is of course most essential to keep the contents of the abdomen out of the way of the needle; and this is best managed by passing the finger as far as possible into the opening, and letting the point of the needle come out of the tissues against it, and then guiding that point carefully across, so as to render any wounding of viscera impossible. In one case I slightly pared the edges of the opening. I now believe this to be unnecessary, its peritoneal lining being sufficiently ready to adhere.

Altogether the operation has been, in my hands so successful, and so perfectly free from any severe effects, that I can unhesitatingly recommend its adoption in suitable cases.—*Lancet, Nov.* 16, 1861, *p.* 471.

## 72.—ON THE MEDICAL TREATMENT OF STRANGULATED HERNIA.

By W. Blower, Esq., Bedford.

A stout lusty young man, by trade a butcher, who had for some time been affected with an inguinal hernia, but had not worn a truss, strained himself by lifting a heavy pig into a cart, and occasioned a further protrusion of bowel. He attempted to reduce the hernia, but without success; in a short time symptoms of strangulation manifested themselves, and when I saw him three or four hours afterwards they had become extremely severe. The tumour was tense, painful, and very tender, the constriction and dragging at the epigastrium were distressing, and the vomiting of stercoraceous matter frequent. I sent him six pills, consisting of ten grains of calomel and three grains of opium, and directed that he should take two immediately and one every half-hour subsequently, and also that he should drink a cup of strong coffee without milk or sugar occasionally. When I saw him again, about an hour and a half afterwards, he appeared to be convalescent; the hernia was soft and reducible, and all the unpleasant symptoms had disappeared. He stated that after drinking the first cup of coffee the sickness stopped, and the uneasiness at the epigastrium ceased. And, as soon as a truss could be procured and fitted on, he resumed his ordinary occupation.

I have treated several other cases of strangulated hernia in the same manner, and with a similar successful termination; except in one, in which, however, the plan was imperfectly carried out. I was induced to adopt this mode of treatment, by the result of some cases where calomel and opium were administered to prevent the ill-consequences of delay, when the operation was unavoidably postponed for a time. Thus, in a case of strangulated femoral hernia, where the usual accessible means of reducing it had failed, and an operation appeared unavoidable, I requested the assistance of the late Mr. Hurst; but, as he was out and not expected home for a couple of hours, I gave to my patient calomel and opium as a palliative until his return, and at the expiration of that period the hernia was soft and reducible by the slightest touch. In another case I called in Mr. Hurst, but he also failed in reducing the hernia, and deemed an operation indispensable; but as, in consequence of another engagement, he was obliged to leave for about two hours, the operation was deferred until his return, and the same treatment was adopted as a temporiser, with a like curative result. And during the latter period of my practice, this was the usual course pursued by me in all cases (and they were not a few), and, with one exception, with uniform success; and in

the case where it failed, the pills were not given as directed, therefore the method ought not to be considered responsible for not succeeding.

The object, in the medical treatment, is to produce a state of muscular relaxation and weakened vascular action. In this condition, the obstacles to the reduction of the hernia depending upon muscular contraction are removed, and the inflammatory processes are checked, so that not only the hernia is rendered reducible, but the tendency to death—the general termination of this affection, if left to itself—is stopped. Many plans for accomplishing these objects have been proposed and used, and not unfrequently with success; but according to my experience, the calomel, opium, and coffee treatment is the most convenient, the least objectionable, and the most successful method, except in children, where the hot bath is the best remedy.

I have tried *bleeding to syncope*, and have succeeded in reducing the hernia, whilst the patient has been in this state; but the loss of the requisite quantity of blood has sometimes been followed by unpleasant consequences. Thus, in the case of a strong agricultural labourer, in whom strangulated inguinal hernia had existed about eighteen or twenty hours when I first saw him, and the symptoms had become very violent, I bled him; but he did not fall down until the third pint basin was nearly filled. The hernia was easily reduced whilst he was in a state of syncope; but it was followed by anæmia and disordered action of the heart, and it was two years before he was able to work again. He lived in a lone cottage, about five miles from Bedford, and, as the disease was very urgent and the lancet was the only accessible remedy, it was obliged to be employed.—*British Med. Journal, Jan.* 11, 1862, *p.* 36.

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## 73.-ARTIFICIAL ANUS RESULTING FROM SLOUGHING HERNIA.

[The patient was 35 years of age, and had left scrotal hernia of forty-five hours' strangulation. The sac was found sloughing, together with the omentum. No intestine was observed. On the third day fæces passed freely from the wound, and on the eleventh he died.]

The lower part of the ileum, which had been the seat of strangulation, was completely divided, the lower end, opening directly into the sac, was contracted, and the upper, fixed at the side of the opening, had no free passage externally.

This example of artificial anus, the result of a sloughing hernia is a fair sample of a class. Having been left to Nature,

the local repair was good, although a free passage from the upper bowel did not exist. The gradual sinking of the patient is the general termination of these cases, exhaustion, as a rule, being the cause of death.

Such cases as the one just quoted afford us some hints for practice, and the question occurs as to the best mode of treating a sloughing hernia; whether it is best to lay the parts open and stitch the bowel to the edges of the wound, or leave the whole to Nature, having freely exposed the gangrenous intestine. In a paper in the 'Guy's Reports' for 1856 I showed that the weight of evidence went to prove that the latter practice is the best, and subsequent experience has confirmed me in that opinion. It appears better as a primary point of practice, and also affords the best chance for a subsequent recovery. —*Guy's Hospital Reports, Vol.* vii., 1861, *p.* 55.

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## 74.—ON THE PATHOLOGY AND TREATMENT OF HEMORRHOIDAL AFFECTIONS.

By T. J. Ashton, Esq., London.

Formerly, surgeons were in the habit of excising hemorrhoids, and, as might be expected, the operation was always attended with profuse bleeding, which in many cases proved fatal. In order to obviate this serious objection to the plan, Dupuytren had recourse to searing the cut surface with irons heated to redness, a proceeding which must have greatly added to the painfulness of the operation. Latterly, an attempt was made to revive excision, and to substitute for the actual cautery the application of nitric acid to the bleeding surface. This would certainly be productive of as much pain, without the security from hemorrhage obtained by the use of the hot iron. Sir Astley Cooper lost several patients from hemorrhage, and then abandoned excision. Mr. Syme, referring to Sir Astley's cases, remarks, "If other practitioners had been equally candid, we should doubtless have had more testimony as to the danger of this operation." However, there is sufficient evidence before the profession to deter any prudent surgeon from adopting it. With the intention of obviating the danger arising from excessive bleeding, removal of internal piles by means of a platinum wire, heated to incandescence by the galvanic current, was suggested and tried, but in practice was not found to possess the advantages imagined. Besides, I presume the burning by this means would not be less painful than by Dupuytren's method, and certainly the operation would be less expeditious. From time to time escharotics of one kind or another have been extolled, and had a short-lived reputation; but failing to realize the advantages their advocates advanced, they have successively

fallen into disuse, excepting two which are useful in some few cases, and to which I shall refer again presently. M. Amussat has recommended what he terms the circular cauterization of the base of the hemorrhoidal tumours, which is effected by peculiar shaped forceps, having grooved blades filled with caustic potash and lime; but English surgeons will not be inclined to have recourse to the plan when told that to allay the pain caused by the operation it is necessary to let a jet of cold water flow on the parts for several hours, and that one patient suffered so much that he sat in a bath for a whole week. Another plan for the removal of hemorrhoids and other growths emanated in Paris, and became a fashion for a time, but happily, in England at least, is now little practised. I allude to their ablation by that crushing, lacerating, and unscientific machine, the écraseur, which, in appearance and operation, suggests the idea of belonging rather to the torture chamber of bygone ages than of being an instrument of modern surgery. M. Nélaton reports that many who have been operated on by it are now the victims of traumatic stricture of the rectum.

When speaking of escharotics, I mentioned there are two that may be employed in the treatment of some cases of the affection under consideration: they are the pure nitric acid and the deutonitrate of mercury. These are of use only in the variety of hemorrhoidal tumour in which the morbid tissue does not rise much above the surrounding mucous membrane. Either may be applied in the following way:—The bowels having been previously unloaded, the disease is brought into view by everting the mucous membrane, or by the use of the speculum ani. The acid is then freely applied to the florid granular surface, which is converted into a white eschar. Great care must be taken not to allow the acid to come in contact with the integument, or severe pain will be occasioned. Chalk and water is used to neutralize the excess of acid and prevent injury to the adjacent tissue. I apply the acid by means of a small piece of lint wound round the end of an eye-probe, which answers better than a spatula, glass brush, or other contrivance. The plan of treatment was suggested by Mr. Cusack, and in 1843 Dr. Houston published some observations on it in the 24th volume of the 'Dublin Journal.' It is a method very applicable to the particular cases I have just mentioned, but even in these does not always succeed.

In 1858, I operated on a young lady, patient of Mr. Chapman of George-street. Previously she had lost considerable quantities of florid blood per anum, and had become perfectly anæmic and highly nervous. A vascular excrescence, about the size of a fourpenny-piece, existed on the posterior part of the rectum, with which a large arterial branch communicated.

and could be felt strongly pulsating. I applied nitric acid freely, and to all appearance effectually. Her health greatly improved, and she remained free from all local disease for about three months, when considerable hemorrhage again occurred, and an examination revealed a recurrence of the vascular growth. Being satisfied no advantage would ensue from again applying the acid, I had recourse to the ligature, with complete success, there being no return of the disease.

I have seen much mischief caused by attempts to destroy large internal hemorrhoidal tumours with the acid, for the removal of which the ligature is the only proper mode of treatment, and which I shall now consider.

There is a popular idea that the operation by ligature is attended with danger to life, and this impression is also shared by those of the profession whose experience in these affections is limited. Sir B. Brodie, with his characteristic candour, records losing three patients after this operation; and these cases are quoted, or rather misstated, by those who advance some peculiar but not very original mode of treating hemorrhoids. Two of these patients had albuminuria, and died of disease of the kidney; but at the time they occurred the important pathological alteration of structure in the kidney, indicated by the presence of albumen in the urine, was not known. In the other case the patient's constitution was so shattered that Sir Benjamin at first refused to operate; and it was only after fully pointing out the danger, and the patient insisting the operation should be performed, that he consented to do it. These cases militate in no way against the operation by ligature, but forcibly illustrate the necessity of looking beyond the local affection; and if the presence of serious organic disease is detected, we must abandon all thoughts of a radical cure, and have recourse to palliative means only. From experience I can affirm that the application of the ligature is a perfectly safe and effectual mode of treatment, provided due attention has been previously given to the constitutional condition of the patient, and that the abdominal, thoracic, and cephalic viscera are free from serious organic disease. The ligature I prefer is a thin hempen cord well waxed, and one half stained so that when divided the respective ends are readily seen. The needle I generally use is fashioned like a nævus needle, but having a greater curve, and with this the tumour is transfixed from above downwards. In some cases the tumour is better transfixed from below: then a needle less curved is better.

The failure of medical treatment, and the certainty that the disease will become seriously aggravated the longer it exists, render its removal by operation absolutely necessary. Various causes influence a patient to seek the aid of the surgeon: it

may be the annoyance and discomfort of the constant mucous discharge; the frequent desire to defecate induced by the presence of the tumours; the great discomfort occasioned by the constant prolapsus: the frequency and severity of the pain experienced in some cases of this disease; or the debility, palpitation of the heart, and other serious constitutional effects resulting from frequent and excessive hemorrhage. It is premised that, previously to operating, the bowels have been thoroughly emptied; the tumours are then made to protrude by the patient sitting over some warm water and straining, or by the use of an enema. To apply the ligature, the patient should lie on a bed, with the nates projecting over the edge, and the knees drawn up. Provided there is but one tumour, and that is small and pendulous, it may be included in a single noose applied round its base; but I have met with no case in which I have not deemed it better to pass a double ligature through the tumour. I have heard of cases where large tumours have been included in a single noose, which, after partially cutting through them, has slipped off, rendering a second, and even a third, application necessary—with what suffering to the patient I leave to be imagined. The tumour being of the size ordinarily met with, an assistant takes hold of it with a vulsellum, or with a pair of forceps, and draws it well down, so as to bring as much of it into sight as possible. If it encroaches on or implicates the margin of the anus, the lower part must be incised, which will save the patient much pain, and the separation of the ligatures will be expedited. The surgeon then passes the forefinger of either hand to the upper margin of the tumour, by which he regulates the entrance or exit of the point of the needle, according as he transfixes from above or below. The needle being passed, the ligatures are drawn through, and then divided; next they are to be tied, and they should be drawn as tight as possible, and secured by a double knot. Sir Astley Cooper recommended that they should not be drawn tight, with the intention of causing less pain; but this was a great error, and he actually produced that which he was desirous of avoiding. The object of the operation is the destruction of the morbid portion of the mucous membrane by cutting off all vascular and nervous supply; and this is necessarily more speedily and effectually accomplished by drawing the ligatures as tight as possible. Care must be taken that the ligatures are accurately applied to the base of the hemorrhoidal tumour, so as to include the whole of it without encroaching on the healthy tissue. This is managed by means of a pair of forceps, or by a three-pronged sharp hook. All tumours that exist should be operated on at the same time; for if they are not, inflammation and intense suffering will ensue, besides leaving

the patient doomed to a return of his former misery. It is advised by some authors, and even by a recent writer, that when several tumours exist not to operate on more than two. If this recommendation is acted on, the result will be what I have just mentioned. After the operation, from thirty to sixty minims of the tincture of opium should be prescribed, which has the effect of tranquillizing the patient; but the chief object aimed at is to constipate the bowels for a few days. On the third morning, an aperient should be administered, unless the bowels act of their own accord; subsequently, if necessary, they must be moved by the use of an enema or some mild purgative every second day. The ligatures usually come away between the fourth and eighth day; and the healing of the ulcers left may be expedited by the application of a stimulating ointment, which is readily and painlessly effected by means of a glass syringe having a jet with a large aperture. For the first few days the diet should be nutritious, but not solid; after the bowels have been relieved, solid meats may be allowed. The patient need not be confined to bed many days; but I insist on the recumbent position being observed till the cure is complete.

Having detailed the plan of treatment of hemorrhoids, in conclusion I will briefly recapitulate the principal points. That many cases will yield to judicious medical treatment; that when it fails, presuming the patient is free from serious organic disease, the hemorrhoidal tumours may be removed with perfect safety, and a moral certainty of a successful result, provided that any defects of the constitution have been remedied and the bowels freely unloaded previously to the operation being performed. That in cases of external hemorrhoids and internal ones implicating the integument, excision and incision is the only proper operative treatment. That to internal hemorrhoids the ligature should be used, except to the vascular excrescence of the mucous membrane I have described, and to which nitric acid may be applied. By acting on these principles, patients may be relieved from these affections effectually and with perfect safety, and that pyæmia, tetanus, and other serious consequences are not by any means likely to occur.—*Lancet, April* 12, 1862, *p.* 379.

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## 75.—CASE OF SUCCESSFUL REMOVAL OF THE ENTIRE TONGUE FOR CANCER OF THAT ORGAN.

By Thomas Nunneley, Esq., Lecturer on Surgery in the Leeds School of Medicine, &c.

(Read before the Royal Medical and Chirurgical Society.)

The subject of the case related in this communication is a man, aged 35, who states that, with the exception of the disease in

the tongue, he never had a day's illness. In early manhood he was not very steady; but for the last twelve years he has been so. He has been married many years, and has had eight children, the youngest being only six months old; all of them have been strong and healthy. There is no reason to suspect any syphilitic taint. For some years he has been employed on a railway, and latterly as a guard. From being a large, strong man, owing to the distress and pain he has suffered and the inability to masticate food, he has become thin, weak, and anæmic. The disease, at first slow, had latterly made more rapid progress, and having not unfrequently been compelled to pass the whole day without food, owing to the pain the attempt to take it occasioned, he was wishful to submit to any operation which afforded a chance of not dying from starvation, which he anticipated would otherwise be the result. He had been subjected during nearly the whole of the three years the disease had existed to treatment of various kinds, both general and local, all of which he thought had been rather injurious than beneficial.

The disease, which was first perceived on one side of the tongue, had invaded the whole structure of the organ as far as the base. In the centre of it was a deep ulcer with irregular edges; the margin of the tongue was tuberculous and irregular, and the whole substance was dense, unyielding, and very hard: the size was somewhat, but not very greatly, increased; there was a constant offensive taste, owing to the discharge from the ulcer; the speech was considerably impaired. As removal of the entire organ, though difficult and dangerous, afforded the only means of recovery, and as the patient was quite willing to submit to the risk, the operation was determined upon.

Having experienced the difficulty of effectually strangulating any considerable portion of the tongue, and the distress it occasions, Mr. Nunneley was unwilling to employ ligatures for the whole, and resolved upon using the écraseur, first cutting an opening for it between the lower jaw and the os hyoides as deeply as could be done without fear of hemorrhage, and also with the object of having as little structure to crush through as possible. In accordance with this, a small transverse incision was made just anterior to the os hyoides through the integuments, mylo-hyoid and genio-hyoid muscles, by which a curved needle, sufficiently large to allow the chain of the écraseur, which was attached to it, to follow easily, was carried from the central line obliquely towards the left side of the base of the tongue into the mouth, and out of the mouth at a corresponding point on the right side, through the same external aperture by which it had entered. The chain thus carried across the extreme base of the tongue was then attached to the racket-bar, and the écraseur set in motion, when, owing to the defective rivets con-

necting the link of the chain, before any strain whatever was put upon the instrument, two of them dropped asunder. All attempts to make them hold were ineffectual, and it had to be abandoned. Threads of strong, fine whipcord were at once carried along the same course as the chain had followed, and tied, both as single and double ligatures, with all the force that could be exerted.

At first the patient suffered very greatly; he could neither swallow nor talk. Nutritive enemata, containing acetate of morphia, according to circumstances, were given, with great comfort and advantage. On the fourth day he was much improved. On Oct. 10th, though the ligatures had cut so far into the base of the tongue that they could neither be seen nor felt, yet, as the organ was regaining a more natural appearance, a very strong ligature of silk whipcord was tied round the base as tightly as possible, and another cord carried through the fissure cut in the base round under the frænum so as to constrict the sublingual attachments, with the effect of apparently well and effectually strangulating the organ. He again improved so much as to require but little morphia, and was able to swallow liquid food with comparative facility, until the night of the 15th, when hemorrhage to the extent of a pint of blood came on. Though this was arrested by a solution of permuriate of iron, it recurred frequently, and though in smaller quantities, and always at once checked by the solution of iron or tannic acid, he was so much reduced that it was determined on the 17th to place another ligature round the base of the tongue. This effectually arrested the bleeding for fifty-four hours, when it again returned so freely that ligatures were carried round both the base and under the frænum in the same manner as on the 10th. On this occasion, however, a new material (which was exhibited to the Society) was advantageously used. There was no more bleeding until the 23rd, when it again recurred to some extent three different times, and necessitated the reapplication of the ligatures in both situations. Not the least pain was experienced on this occasion, showing the nerves had already been divided. There was no subsequent return of the hemorrhage. On the 30th two other ligatures were applied, no pain whatever being caused in so doing. On Nov. 2nd, as the tongue was still firmly attached, though apparently cut through at the base, a twisted double steel suture wire was carried round it under the frænum, and by means of a suitable apparatus twisted well home until it broke, without, however, cutting through the tissues. This plan was repeated on the 3rd with a much stronger wire (a strong pianoforte string), which also gave way before completely severing the connexions. A repetition of this on the 4th cut through the sublingual tissues, and the tongue was free. Neither pain

nor the loss of any blood occurred in any of the last four or five operations. There was so little wound to heal that it was well the next day, proving that, as suspected, the base had been cut through for some few days. A mass of knotted thread and wire was removed on the following day, but two or three threads were so deeply imbedded and so fast that many days elapsed before the last was taken away. The knots were perfect, showing how great an amount of force had been exerted without complete strangulation being effected; proving also that, though the base of the tongue be completely cut through, the sublingual connexion alone is sufficient to maintain the vitality of the organ.

From this time the patient may be said to have been well. The next day he ate with great gusto a hearty dinner of roast duck. He rapidly improved in flesh and strength. The facility with which he can masticate and swallow is surprising; indeed he says that he can do so much better than for the two previous years. The deglutition of liquids, as might be supposed, is more impaired than that of solids. The sense of taste is enjoyed in a very considerable degree, while the power of articulation is great beyond all expectation. He can pronounce every letter of the alphabet, many of them perfectly (all the vowels), most of them distinctly. The three there is the most difficulty in are K, Q, and T, which are difficult and indistinct in the order they are named, K being much more so than T. In conversation he can be readily understood, if not excited and hurried; if he be, some words are indistinct, otherwise his power of articulation is sufficient for all purposes of intercourse, so much so that it is probable he will be appointed master of one of the smaller stations on the railway.

After referring to the danger which he believes must always be incurred by following the plan of extirpation practised by Professor Syme, which inflicts so great an amount of mischief not directly involved in the mere removal of the tongue, which itself is sufficiently serious, and to the pain, delay, and danger of hemorrhage incurred by the use of thread ligatures, the author concluded by recommending in preference the écraseur, introduced by a submental opening made by a knife through all the tissues, which would not occasion much bleeding; and, when from any cause this instrument is not employed, after a deep fissure has been made in the base of the tongue by a submental ligature, an earlier use of strong wire ligatures than was adopted in this case.

Mr. Moore did not think that the author had clearly shown the disease to be cancer. The signs, as hardness, ulceration, &c., were common to several diseases of the tongue. Mr. Moore alluded to one case in which extensive ulceration and

hardening of the tongue was cured by arsenic. The duration of the disease in the author's case, and the fact that it did not affect the glands, were in opposition to the view that the disease was cancer; and the members could not, from the evidence brought before them, confirm the author's diagnosis. At the same time, it must be remembered, that a person may see many things which, to his practised eye, are convincing, and yet which he does not think it necessary to put on paper. He did not think that the operation would be done again. In operations on the tongue the risk might be diminished and pain saved by previously dividing the nerves and securing the vessels.

Mr. PAGET said that the chief point in the paper was to show that the whole tongue could be safely removed. It showed also in this case how great difficulties arising in an operation might be overcome. He (Mr. Paget) thought that a good substitute for the chain would be found in whipcord, and it had this advantage, that it might be altered in its course by needles so that it would cut on a curve. He also could not agree with the author in his diagnosis. The description of the disease seemed to be that of tertiary syphilis rather than of cancer.

Mr. NUNNELEY said, in reference to the supposed syphilitic nature of the affection of the tongue, that there was no history whatever of syphilis, although the patient owned to having had gonorrhœa. The patient's family were quite healthy. The man had been on one occasion salivated, but no improvement followed. He (Mr. Nunneley) could not understand how it could be supposed that the case was one of syphilis.

At the close of the meeting it was suggested that it would be of interest if the patient were to be carefully examined to ascertain if any evidence of syphilitic infection could be discovered. The man was undressed and very carefully examined by Mr. Henry Lee and other members, who were perfectly satisfied that there was no indication of any such taint.—*Lancet*, *Dec.* 21, 1861, *p.* 594.

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## 76.—ON DIVISION OF THE GUSTATORY NERVE, AND ON LIGATURE OF THE LINGUAL ARTERY, IN THE TREATMENT OF CANCER OF THE TONGUE.

By CHARLES H. MOORE, Esq., (Abstract of a paper read before the Royal Medical and Chirurgical Society.)

The principal object of the author was to revive an operation which had been devised by Mr. Hilton, once practised by him in the year 1850, and though of much value, never again performed. (Guy's Hospital Reports, second series, vol. vii., page 251.) Amongst the many sources of the peculiar painfulness of cancer

of the tongue, irritation of the fifth nerve could be assigned as occasioning the pain of so much of the tumour as was in front of the fauces; the tenderness of the ulcer, the pain in the regions of the parotid, ear, temple, and crown of the head, and the excessive secretion of saliva. All these being traceable to the encroachment of the disease on the gustatory branch of the fifth, the section of that nerve between the disease and the brain should relieve them.

The operation, as practised by Mr. Moore, consisted in cutting through all the soft structures on the inside of the ramus of the jaw by an incision, commencing immediately behind the last molar tooth, and extending three-quarters of an inch in a direction towards the angle of the jaw. The only structures which could be divided by such an incision were the mucous membrane and a part of the mylo-hyoid muscle, with the gustatory nerve descending forward between them, about half an inch from the tooth, and nearly at a right angle with the direction of the incision. It was advisable to operate with a curved knife, as the alveolar ridge might shield the nerve from the edge of a straight one, and also to cut outwards quite to the bone.

The author had operated in five cases of cancer of the tongue, three of which were given at length. The relief was immediate. Salivation, the pain and tenderness of the tongue, and the reflected irritation of the fifth nerve, were all gone at once. Soreness of the wound, with swelling, remained for some days; but after that the patients took food, swallowed, and spoke with comparative ease. They slept, and improved in general health. The tongue in each case was absolutely insensitive on the side operated on from the anterior pillar of the fauces forward, and no sapid substances aroused taste in those parts. One patient frequently, on awaking from sleep, found himself chewing the cancerous mass in his tongue between his toothless gums, but the compression occasioned him no pain. The relief was permanent so far as the gustatory nerve was concerned; but when the disease invaded the area of the glosso-pharyngeal nerve, new pain arose. One patient had been operated on in August, and had no return of pain up to the present time—a period of three months. In the last-mentioned case the author had attempted to benefit the patient, in whom extirpation was unsuitable, by withdrawing from the tumour its nourishment of blood, in addition to its nervous influence. He accordingly tied the lingual artery on the side of the disease two days after he had divided the gustatory nerve. The ulcer became paler after the operation, but neither sloughed nor healed, and in five weeks the whole tumour was perceptibly smaller than before the operations. From that time the tumour began

again to increase. The author had desired, upon the renewal of the growth in the tumour, to tie the opposite lingual artery also; but the patient was content with the amount of ease which he was enjoying, and indisposed to incur a renewal of the pain which had followed the first operations.—*British Med. Journal, Dec.* 7, 1861, *p.* 618.

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## 77.—ON CLEFT PALATE.

By A. G. Field, Esq., Brighton.

[In the commencement of his paper the author says that he can scarcely imagine any defect of the hard palate so great, but that steady perseverance, with a moderate amount of skill, on the part of the surgeon, and a fair amount of fortitude and patience on the part of the patient, may not lead to a perfect cure. There has been a little controversy as to whom the credit is owing, of having first proposed the use of the periosteum of the hard palate to supply a congenital partial deficiency of that part. Mr. Field says:]

My own experience has led me to conclude that the principal reason of failure is too much having been attempted at one time—Nature has been asked for too much at once, and so has refused the demand altogether, which she would readily have yielded in instalments. I think all who have operated much in this direction will bear me out in this assertion, that unless the opening in the hard palate is very small indeed, its closure must be the result of more than one operation.

Another point it is desirable to notice. The idea of separating the periosteum for the purpose of strengthening the flaps in the operation of staphyloraphy is certainly not new. My first instructions in operations on the palate were received from my friend, Mr. George Pollock, many years ago, and I well remember he particularly urged the necessity of keeping the instrument close down upon the bone while flaps were being formed, and taking all that could possibly be got to make them with, including as much as possible of periosteum, and for this purpose he frequently used a blunt instrument, precisely like one which I have myself employed for the last six years. I do not know that it matters very much to the cause of surgical science whether this improvement in the operation originated in Germany, or in England, but as it has been considered of sufficient moment to claim the attention of your readers, I beg to state that it was known to me many years ago, and that I derived my knowledge from the source I have mentioned.

*Case of Congenital Cleft of Hard and Soft Palate.—Complete Closure by Operation.*—F. W., aged 19, had congenital fissure of

the palate, extending through the velum forwards to the incisive foramen. The space was about an inch wide at the junction of the hard and soft portions, but the walls of the hard palate were nearly vertical, and covered by a good thickness of soft structures. The divided halves of the uvula approximated each other, but did not meet on an effort at deglutition being made (partly by the action of the divided azygos uvulæ, I suppose), though very widely separated when at rest. He suffered the usual inconveniences from this defect. His voice was nasal, and his utterance very indistinct. Fluids always escaped in a greater or less degree through his nose when he attempted to swallow them. Altogether the case was an excellent one for operation, so after improving his condition by extra diet for a few days, I operated on May 12, 1856. This was the first congenital case I ever attempted, and I did what I would not again, inasmuch as I closed the hard and soft palate at one time; the consequence was a prolonged operation and its attendant ills. The levator palati was divided by passing a knife through the soft palate, and the palato-pharyngeus was cut through by means of a blunt-pointed pair of scissors, while traction was made on the flaps by a thread passed through them, the ends being held in one hand, while the other was employed in the division of the muscle. Some considerable quantity of blood was lost during the operation, more than should be, owing to the extent of surface exposed at one time; but the bleeding was controlled as it occurred, partly by holding lumps of ice in the mouth, and partly, when necessary, by pressure with the tip of a finger. The flaps were united by eight silken sutures.

Twelve days after, all the sutures having been removed, the soft palate had united firmly excepting the uvula, and some union had also taken place in the fore part of the fissure, but an opening still existed through which a finger might be passed into the nose.

June 20, 1856. The edges of the opening were pared with a small scalpel, lateral incisions were made quite down to the bone, and the parts included between these incisions separated from the palate processes (certainly including much of, if not all, the periosteum). The opening was then closed by three silk sutures, the lateral incisions being filled with cotton wool.

The uvula, after the necessary quantity of mucous membrane had been removed, was united by means of one suture passed through its lower part, from right to left, a split shot being attached to each extremity. The uvula united, but a diminished opening remained in the hard palate, for the closure of which the operation of June 20, with slight modifications, was twice repeated within the succeeding two months, and it was not till I put in practice the principle which I advocated in this journal

on a former occasion, that I finally succeeded in completely closing the fissure. This happy result was attained in the following manner:—

I quote from the published report of another case:—"Having completed the other steps of the operation in the same way as before, the parts were carefully dried and washed over with a solution of gutta percha in chloroform, and a thin sheet of gutta percha was applied over the whole surface. This I did because I believed failures in my previous efforts to obtain complete union depended on a portion of mucus being drawn from the nose between the edges of the flaps in the act of swallowing which it is impossible for the patient wholly to avoid. This belief was strengthened by observing, after the failure of a previous operation, that a shred of mucus was drawn further into the mouth after each time the patient closed it for the purpose of swallowing the saliva which collected while she held her mouth open for examination, and I imagine it occurs in the following manner: When the first part of the act of deglutition has been accomplished, and the morsel has passed beyond the reach of the tongue, the upper surface of that organ is left accurately applied to the roof of the mouth, and its return to the position it usually occupies is effected by the genio-hyoglossi muscles, which being inserted near the median line would, by their action, depress the middle of the tongue first, while its sides were still in contact with the palate; by this means a degree of suction would be produced whereby the loose edges of the flaps would be liable to displacement, and to have the nasal secretions drawn down between them into the mouth, preventing union of their surfaces, however accurately they may have been adapted.—*Med. Times and Gazette, Jan.* 18, 1862, *p.* 57.

## ORGANS OF URINE AND GENERATION.

### 78.—ON CONGENITAL STRICTURE OF THE URETHRA.

By James Syme, Esq., Professor of Clinical Surgery in the University of Edinburgh.

[The patient was 22 years of age and stated that from his earliest recollection he had had great pain and difficulty in passing water. He had been repeatedly treated by dilating instruments but the symptoms produced by the stricture invariably returned, and when in Australia a collection of matter formed in the perineum, and burst, urinary fistula remaining.]

On examination, I found that most of his urine passed by the perineal opening: and that anterior to the scrotum, about two inches and a half from the orifice of the urethra, there was

a very tight stricture, which would not allow the smallest bougie to pass, and only admitted with difficulty a slender probe, of which the point was considerably smaller than that of one in ordinary use. At the seat of contraction, the urethra was thickened so as to form an oval-shaped swelling, of the size of an almond, and of firm consistence, similar to that which usually attends resilient or unyielding strictures in the anterior part of the canal, but of more than ordinary extent. From the indication of obstinacy thus afforded, together with its history, I concluded that the case did not admit of benefit from any attempt at dilatation, and therefore resolved to divide the part by a free incision. With this view, I employed the slender instrument that had been passed through the stricture, and which, gradually enlarging from the point backwards, carried a groove on its thicker part. Into this I inserted the point of a knife below the urethral thickening, and pushed it forwards, so, as I thought, to effect complete division of the stricture. Instruments of moderate size were then passed into the bladder, shewing that there was no other obstruction in the canal; but not with the perfect facility and freedom usual after such an operation. I trusted that what remained of the stricture would yield to dilatation, and was no less sorry than surprised to find that little improvement resulted from what had been done, as the urine did not issue with more freedom from the orifice of the urethra, and continued to escape not only by the fistulous opening in the perinæum, but also by the small opening which I had made.

On September 6th, feeling that the urethra was thickened at each extremity of the incision, I again introduced a director, and pushed the knife along its groove in both directions. No decided change was thus produced; and, notwithstanding the continued use of bougies, which still encountered difficulties in their introduction, the state of matters appeared so unpromising that I began to fear there must be an obstacle to recovery in some other part of the urinary organs. But, before abandoning the case as hopeless, I resolved to try the effect of cutting through the whole constricted part of the canal in such a way as would more certainly ensure its complete division; and, therefore, instead of pushing the knife along the groove against the thickened texture, which by its toughness might elude the edge, however keen, I introduced the blade between the integuments and the urethra, so as to enter the stricture beyond the anterior extremity of the part concerned, and then cut downwards, so as to penetrate with certainty through the whole extent of induration. A full sized catheter was then introduced, and retained three days.

This was done on October 29th; and produced a very different

result from those of the two previous operations. The urine soon resumed its proper course; the fistulous openings closed; and instruments of the full size passed without the slightest difficulty or feeling of constriction. At the end of a month, the patient was in every respect perfectly well, and left the hospital without the slightest trace of his life-long misery.

Of the points which this case illustrates, the one most important in a practical view is the risk of failure which it indicates from the tough texture being pushed aside instead of freely cut by the knife. It seems not improbable that many results of the operation may thus have been rendered unsatisfactory; and I would therefore suggest that the method adopted in the circumstances just related should be always employed. For this purpose, the groove of the director should extend about an inch into the thick part; and I have had the instrument made so accordingly.—*British Medical Journal, Jan.* 4, 1862, *p.* 1.

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## 79.—ON PRACTICAL LITHOTOMY AND LITHOTRITY.

By Henry Thompson, Esq., Assistant Surgeon to University College Hospital.

[From various sources Mr. Thompson has collected and availed himself of no less than 1500 cases. The interest of the subject of lithotomy seems to have sprung up afresh during the last few few years, seeing that in the writings of fifty or sixty years ago no mention is made of any other operation than the ordinary lateral operation.]

The various procedures employed under the name of lithotomy must be ranged in two separate classes—namely:

1st. Operations by which the bladder is reached from the perineum; and among these I shall notice several principal methods, which will sufficiently include minor modifications.

2nd. An operation performed above the pubes, and known as the high or supra-pubic operation.

I. *Operations performed in the Perineum, or Perineal Lithotomy.*—These are of various kinds, but all may be classified either as lateral or as central operations.

Lateral operations are those which are confined within one of the lateral divisions of the perineum. The incisions are directed between the central and lateral muscles of the perineum. They necessarily approach the pubic ramus, the pubic artery and its branches, and are directed transversely to these latter near to their origin from the arterial trunk. They involve one side of the prostate gland—it may be nearly to its full extent; while in children, and in exceptional adult cases, they go beyond it.

Central operations are those in which the incisions are limited to the central part of the perineum, are made in the line of the raphé itself or transverse to it, and lie mainly between the anus and the symphysis pubis. They do not approach the rami or the great vessels, nor do they run transversely near to the origin of the branches from the pubic artery. In no case do the incisions reach the external limits of the prostate gland. The distinction is important, and has an intimate relation to all that follows. It indicates a principle by which to distinguish and classify all the proposals made for the performance of lithotomy in the perineum.

*Lateral Operations.*—There is one proceeding only which will be regarded as the type of this class—namely, the operation at present most generally practised in this country, and universally known as the lateral operation. Although in different hands some of its details vary, the general outline and character are the same in all.

*Central Operations.*—The "median" operation:—The stone was removed by a median incision in the perineum, made close to and parallel with the raphé in the old Marian operation during the sixteenth century and long afterwards. But the far greater success which the lateral method realised led ultimately to the total extinction of the Marian. The disastrous results of this procedure were due, however, to the violent laceration of the neck of the bladder and urethra by which room was made for the extraction of the stone, and not to the median incision of the urethra, which was all that the knife effected in that operation. This distinction was, nevertheless, lost sight of by most lithotomists, until the Italian surgeons, at the commencement of the present century, drew attention by their success to lithotomy in the median line. Mr. Allarton brought it into notice in this country, publishing in 1854 his own method of performing the operation, and it has been generally spoken of here as "Allarton's" or as the "median" operation.

Dr. Buchanan's method, in which he uses an angular staff, first employed by him in 1847, may also be classed under the head of central operations, although it is capable of becoming a lateral operation when required.

The bilateral operation of Dupuytren—so named because the incisions, both external and internal, involved equally each side of the middle line—is, notwithstanding its name, a central rather than a lateral operation.

The medio-bilateral — a combination of the two preceding operations, as the term implies—was made known by Civiale in 1836, having previously been practised by him, and subsequently by himself and others to a considerable extent, in France.

Lastly, the recto-vesical operation, which is a continuation of the median operation from the perineum into the rectum.

The problem has been presented for years, and is still presented with increasing force: Is the lateral operation the best mode in all cases of extracting through the perineal region a calculus from the bladder? That its results have not satisfied the expectations, or at all events the wishes, of many surgeons, is evinced by the numerous efforts which have been made from time to time, by the most experieced operators, to discover a better method. Witness the recto-vesical operation, the bilateral and the median operations, and the medio-bilateral of Civiale; to say nothing of the endless lesser modifications, which have been many times proposed, forgotten, and reproduced. All of these appear to be the result of a conviction, which has gained ground during the last fifty years, that certain dangers incident to incisions made in the lateral division of the perineum may be avoided by confining the incisions mainly to the centre. It has been believed that severe hemorrhage may be thus avoided—that the capsule of the prostate will not be divided, and consequently that the cellular interspaces between the pelvic viscera are less likely to be opened by incisions in the centre than on one side only of the perineum. Unquestionably it must be agreed by all that the anatomical necessities of the region demand that in the preliminary incisions of all perineal lithotomy, lateral or central, the upper and outer parts of the perineal space are to be avoided, and that the deep ones should be confined within the limits of the prostate gland. But there is another necessity, not an anatomical but a vital one, which must also be complied with, and it is no less important,—namely, the fact that the internal opening must be sufficiently free to admit the stone to pass without the exercise of so much force as to endanger the neck of the bladder. It is the clashing of these two opposed considerations which will always maintain a difference of opinion and of practice in lithotomy. One school will be most influenced by the dangers to which anatomy demands attention; another school will be most impressed with the vital injury which the tissues suffer when the incisions have been too limited. The difficulty is to reconcile them; to find precisely the safe medium of action. It must vary in different cases, and the judgment of the operator must decide the question in each.

It was under the influence of anatomical considerations that Dupuytren was led to devise his "bilateral" operation. To avoid the course of the pudic and its branches, the bulb, and the rectum, and, by two minor incisions springing from the central axis, to avoid any division of the prostatic capsule, he planned the procedure first performed by him in 1824.

It was on similar grounds that Civiale practised a method which he describes in his "Paralléle" (1836). It is remarkable that this operation appears not yet to have been described in this country, especially considering its near relation to the median operation, and the fact that this has been so much discussed of late years. I have witnessed the successful performance of it in his hands; and have myself performed it in a case which occurred during the autumn of the past year, and which turned out exceedingly well. My colleague, Mr. Erichsen, held the staff; and I did the same for him a few days afterwards in a case of his own, in which he performed it also. It should be stated that, in his last edition of his well-known work, Mr. Erichsen has suggested precisely this mode of operating as an improvement on the median, although he had not at that time put it in practice.

A staff with a median groove is introduced, and firmly held against the pubes by an assistant. An incision, about an inch and a half long, is made in the raphé of the perineum, in front of the anus, and carefully carried down towards the staff, endeavouring to avoid the bulb, until the membranous urethra is reached. This is opened by an incision sufficient to admit the end of a double-bladed lithotome, resembling that of Dupuytren, but straight instead of curved, into the groove of the staff. The lithotome is pushed steadily onwards into the bladder; then opened and withdrawn directly outwards in the middle line, dividing the prostate horizontally as well as the deep fascia in its course. The breadth of the internal or horizontal incision is less than in Dupuytren's operation, in which the two blades of the lithotome were extended so as to be an inch and a quarter to an inch and a half apart. Civiale advises that they should ordinarily be one inch apart, and never, or very rarely, more than an inch and a quarter.

The Median method, known as Allarton's operation, consists in a longitudinal incision in the raphé through all the tissues between the apex of the prostate and the skin, usually made by transfixing with a straight bistoury, and cutting upwards. The operator dilates the neck of the bladder with his finger; and Mr. Allarton has recommended, if this be insufficient for the purpose, the use of Dr. Arnott's hydraulic dilator. A branched metallic dilator has also been employed, where the stone is large. It appears, however, very undesirable to use mechanical apparatus to dilate the structures at this spot, and I believe it to be far safer to make an additional section when necessary.

Of all the cutting operations for stone, it is unquestionable that the median still presents that in which the bladder is reached with the smallest amount of section by the knife, and it appears to me to become dangerous just in proportion as

injury by laceration, or over-pressure under the name of dilatation, is superadded to the incisions. These latter involve the bulb to a small degree, which is the only structure of importance divided by the knife besides the prostate, and this latter is only slightly notched at the apex in the ordinary mode of performing the operation. But when the deeper parts of the wound feel more than usually rigid and unyielding, or when the stone proves to be larger than was anticipated, it seems desirable to make an additional incision for the purpose of affording more space. Unless this be done, the opening is certainly confined, and does not safely afford room for any but stones of moderate size.

After all, the anatomical axiom laid down at first must not be forgotten—viz., that any operation the incisions of which lie altogether between the anus and the symphysis pubis, even although aided by some lateral section, do not afford an opening sufficiently capacious for the safe removal of really large stones. Contrast the want of space in this part of the pelvic outlet, caused by the converging pubic rami, with the room which exists in one of its lateral divisions, and the truth of this assertion will be manifest.

Dr. Buchanan of Glasgow called attention in 1847 to the advantages of operating in the central part of the perineum instead of the lateral, and of employing a staff of rectangular form on which to make the incisions. This is introduced into the urethra, and by means of the left forefinger in the rectum the angle is made to correspond in situation with the apex of the prostate, so that the gland can be felt just beyond, between the finger and the staff; the latter being well depressed, the angle is brought near to the surface, and is readily felt in the perineum. The staff is then carefully maintained in this position by an assistant; the operator, keeping his finger still in the rectum, enters a bistoury opposite the angle of the staff, and therefore immediately in front of the anus; he holds it in his right hand with the palm upwards, the blade horizontal and its edge directed to his right; and he pushes it straight into and along the groove as far as the stop at its extremity. He thus enters the bladder at once, taking care to keep the blade parallel with the horizontal or grooved portion of the staff throughout the whole of the thrust. Next, he withdraws the bistoury slowly, and, as he does so, cuts outwards and downwards a distance rather more than equal to another breadth of his blade, and then directly downwards to the same extent, describing in this manner a curved line equal to about one-fourth of a circle round the upper and left side of the rectum, in which his finger still remains.

Thus far it is, as expressed by Dr. Buchanan himself, about equal to the half of Dupuytren's operation. If the stone is large,

an incision made on the right side of the prostate has the effect of converting the proceeding very nearly into the operation referred to. But it is also easily capable of extension in another way; since if the incision by the side of the rectum and through the prostate be continued much beyond the extent described in the original direction, it becomes a lateral operation placed very low in the pelvic outlet. I have given it in some detail, because there is no description of it in our language: I am indebted to one from the French, kindly sent me by Dr. Buchanan which, he says, is the best existing.—*Lancet*, *Feb.* 15, *and March* 1, 1862, *pp.* 167, 218.

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## 80.—ON THE CAUSES OF DEATH FOLLOWING LITHOTOMY.

By Henry Thompson, Esq., Assistant-Surgeon to University College Hospital.

[A careful consideration of numerous facts leads the author to take views of this question which differ from those generally held respecting it. Undoubtedly the first and most frequent cause of death in the adult is acute inflammation of the tissues, especially of the loose cellular tissue around the neck, base, and sides of the bladder. This may be caused by urinary infiltration, owing to mechanical violence, or to too deep incisions, or by want of reparative power in the patient.]

1. By mechanical violence inflicted in the removal of the stone, especially when the opening is of insufficient size.

The majority of authors affirm that infiltration of urine is the most common cause of death—a statement that I venture not only to call in question, but to regard as the source of serious error in practice. Infiltration of urine is one of the causes of suppuration and destructive inflammation of the perivesical cellular tissue; but it is by no means the universal one. The doctrine based on this belief is as follows:—If the internal incision passes beyond the limit of the prostate in any direction, so as to open up the cellular interspaces behind the deep fascia, urine is almost certain to find its way into them; and, if it does so, fatal inflammation will result: in order, therefore, to avoid this danger, the internal incisions must be extremely limited. But, sound as the principle is to keep the internal incision strictly within the prostate in adult patients, in practice I am satisfied that the desire to limit it has been carried to an extreme degree; and that another and not less serious danger of arousing inflammation of the same cellular tissue has by this very means been increased—I refer to the danger which attends an attempt to drag the calculus through

an opening of insufficient size. From what I have seen of the practice of lithotomy in various hands, in town, in the country, and abroad, I am persuaded that insufficient internal incisions are equally dangerous with those which are too free; and that the tendency of the present day is toward the former extreme. The purely anatomical view of the subject appears just now to be in the ascendant. The *vital* attributes and dispositions of the organs involved are not sufficiently regarded. The student is taught to fear beyond all things an approach of the knife to the peripheral limit of the prostate; and, in overdread of cutting it, he barely divides the prostate at all. Hence the no less dangerous injury which results from violence inflicted by the forceps and by the stone upon the neck of the bladder, and from the powerful traction upon it, which injures, often irreparably, the loose cellular connexions in which the viscus is imbedded—connexions which are delicate in structure and loosely applied for the purpose of permitting free extension of its parietes to the varying condition of size which its function as a reservoir of urine demands. Destructive inflammation of these delicate structures is easily produced by the forcible dilatation and the dragging downwards of the neck of the bladder which insufficient incisions render necessary. Inflammation once extending through these structures rapidly invades the peritoneum, which, very probably, is more frequently implicated in this manner than by any other cause.

In connexion with this subject there is a very significant fact, the bearing of which we shall presently examine, viz., that while it is certain that the boundaries of the prostate are almost invariably overstepped by the knife in children, infiltration of urine very rarely occurs in their cases. Happily also, infiltration does not necessarily follow such incisions in the adult; but they render it more likely to occur. That the prostate has often been completely divided with impunity for the removal of large stones is certain; and the risk incurred from that cause is unquestionably serious. Danger is always great in a ratio proportioned to the size of the calculus; but this arises quite as much from the violence inflicted in removing it as from the depth of the incisions employed.

Let it not be imagined from these remarks that anyone can deprecate more strongly than myself the making of an incision in the prostate more deeply than the size of the stone demands; but I am very certain that it is safer to extend the incision, when the stone cannot be extracted without exerting violence, than to inflict the injury which such a proceeding necessarily involves. The advocacy of small internal incisions by Scarpa, who laid down as an axiom that an incision of five lines into the prostate, with dilatation, sufficed for the extraction of a stone

of more than ordinary size, and by Sir B. Brodie, in his admirable lectures here, as the *sole or chief* means of preventing urinary infiltration, has greatly influenced professional opinion on this subject. And I believe the effect may have gone beyond the intention of its authors; since the force with which this particular source of danger has been insisted on by almost all subsequent writers, has led many to regard it as the only, or at least the main, evil to be feared in the operation; and thus, perhaps, has indirectly occasioned the oversight of danger in the the opposite direction. I wish here to point out that in shunning Scylla we may encounter Charybdis, and that a great obstacle to successful lithotomy lies on either side of our path, and not on one side only; that we must preserve the neck of the bladder equally from too deep an incision on the one hand, and from the mechanical injury necessitated by one which is too limited, on the other. I fortify my position by reference to the significant fact that the most successful operators have been those who advocated sufficient incision as less dangerous than violent extraction. Thus Mr. Martineau, who is well known to have cut eighty-four cases at Norwich with only two deaths, writes, in that brief and simple account of his method which he presented to the Medical and Chirurgical Society in 1821,— "Should the stone be large, or there be any difficulty in the extraction, rather than use much force, while the forceps have a firm hold of the stone, I give the handles to an assistant..... while the part forming the stricture is cut, which is easily done, as the broad part of the blade becomes a director to the knife; and, rather than lacerate, I have often repeated this enlargement of the inner wound two or three times."

At the same time it is always to be remembered that the neck of the bladder is susceptible of dilatation to a very considerable extent, if only it be *gradually exerted.* It yields first to the pressure of the finger as it passes through immediately after the knife; secondly, it dilates further in the act of sliding in the forceps upon the finger; and lastly, it gives away still more when the forceps is withdrawn containing a stone between the blades, especially if it be a large one. This, its susceptibility of becoming dilated, is of the utmost value to the lithotomist. Indeed, if it did not exist, and largely too, none but small stones could be withdrawn through any incision limited to the prostate only. But in order to take advantage of it, the dilatation must be made slowly and gently. If done hastily, harshly, and forcibly, it is not dilatation which has been accomplished, but rupture. And by "rupture" I do not mean the mere enlargement of the wound in the prostate and neck of the bladder, which probably is often legitimately occasioned, but the rupture of the surrounding cellular connexions with the

numerous veins and the capillary network which traverse them —results of an extremely dangerous character. In this way inflammation of the cellular tissue, pelvic abscess, or phlebitis may be set up: suppuration is produced in a situation where the pus finds its way to the peritoneum, and not to the surface; and when this state of things exists, a deep incision would have proved a safeguard, rather than the contrary, by affording exit to the confined matter. It is wholly impossible, then, to overrate the importance of slowly and gently dilating the neck of the bladder and the incisions which have been already sufficiently made, and giving abundance of time in the act of introducing the forceps and especially in that of withdrawing the stone. If there be any single proceeding in connexion with the practice of lithotomy, no matter what is the operation performed, which demands more than any other, care, attention, and self-command, I should say it is the manner in which we traverse with instruments the wound in the neck of the bladder.

2. Death after lithotomy may result from rapidly spreading inflammation produced by urinary infiltration into the cellular interspaces between the pelvic viscera, when they have been opened up by too deep incisions.

This result, although undoubtedly occurring sometimes, does so much less frequently, I believe, than is usually supposed. It is true that at a post-mortem examination, after a large stone has been with difficulty extracted, the cellular connexions of the neck and base of the bladder are found to be broken up; sloughs of the connective tissue appear bathed in fluid, seropurulent and urinous; and marks of peritonitis, especially severe in the pelvis, are observed. But there is good reason to believe that in most cases urinary extravasation is not the primary cause of the inflammation, but that inflammation has been the occasion of the urinary extravasation. Cellulitis, produced by violence, has first destroyed the connexions in the manner described above, and then the urine has rapidly infiltrated the disintegrated tissue, and has lighted up a virulent peritonitis, or intensified a previously existing one. Such appears to be the true explanation of the phenomena which mark the progress of events during the period, more or less brief, which follows the operation in many fatal cases.

Infiltration by no means necessarily occurs when urine passes over the newly made section of cellular *spaces*, so called; in fact, cellular interspaces between muscles and between viscera do not exist, except when made by the anatomist for the necessary purpose of demonstrating the planes of cellular tissue which unite adjacent organs, and facilitate freedom of movement between them. I very much doubt if urinary infiltration ever occurs when they are otherwise uninjured, in a person of fair vigorous

health. To judge from the language held respecting this subject, one would imagine that hollow intervals existed between the organs in question, over which urine had only to be poured in order to be drained mechanically into them. No such thing exists. In the child, where these interspaces are of the loosest and most delicate kind, and where the bladder is active, powerful, and irritable, urine is constantly poured out after this operation over the visceral interspaces which have been freely divided; nevertheless, with what extreme rarity do we meet with urinary infiltration in the child! But once inflame this cellular tissue, destroy its healthy character, or even perhaps let the patient be of unsound health, or one in whom "the flesh never heals well," to use a common phrase, and then we have the condition in which urinary infiltration may take place with rapid and fatal effect.

I am aware that this doctrine is opposed to the generally received notions on this subject. I speak with great respect for existing views; but careful pathological study of the subject by the bedside of the dying patient, and at the subsequent autopsy, has convinced me that the true cause of death in the majority of cases, the cause that it most behoves the operator to guard against, is violence in opening up the internal part of the wound, and laceration of the tissues there, and not the primary passage of urine into the intercellular connexions about the neck of the bladder. Happy is it if it be so, since the first it is in his power to avoid; the second is a danger which would be often inherent in the operation, and unavoidable with a stone much above the average size. That it is not an inherent necessity in the operation seemed to me to be indicated in an early study of this difficult and important subject by the fact that forty or fifty consecutive cases of lithotomy might be cut, and have been cut, without a single casualty. If it were a fact that cellular interspaces could not be cut without the greatest risk to life, how could such a result be possibly accounted for? It was necessary to suspect the existence of another cause; and here the comparison of living phenomena with anatomical appearances led me to conclude that the cause is avoidable, and not inherent. That, to sum up the subject, in the great majority of cases, the cause of death is due to unnecessary violence inflicted on the neck of the bladder and parts adherent, causing destructive inflammation of the connective tissue and of the network of minute bloodvessels which pervades it, and that then, and not until then, does infiltration of urine occur, when it rapidly and frightfully augments the already existing danger. In some cases a small quantity of poisonous fluid, associated with or resulting from decomposed urine, probably enters the circulation by absorption, and pro-

duces those depressing constitutional symptoms which always accompany this accident, and which are dangerous in proportion to the diminished capacity of the kidneys to eliminate them from the blood, and of the constitution itself to overcome the shock which it invariably sustains in these circumstances. Lastly, in all or nearly all instances, the irritating fluid soon reaches the peritoneum, and, if the powers of life are not already exhausted, it gives rise to fatal peritonitis.—*Lancet, March* 8, 1862, *p.* 245.

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## 81.—ON LITHOTOMY IN THE FEMALE.

By F. Le Gros Clark, Esq., Surgeon to St. Thomas's Hospital.

Stone in the bladder in the female is of comparatively rare occurrence, and the opportunities you have of witnessing its removal are therefore comparatively few. As I operated on a little girl not long since, I take the present occasion to refer to this subject.

In many instances a stone may be removed from the female bladder without any cutting; that is, when there is such proportion between the size of the urethra and the foreign body as to admit of the passage of the latter through the former without any serious laceration. The dilatability of the female urethra is very great, and I have removed a stone of considerable size without either cutting or laceration. In the present case this proceeding was out of the question, as the patient was a child of five years old and the stone was evidently a large one. This child had never retained her water, and had suffered from symptoms of calculus from her birth.

I operated in the following way:—Having passed a small three-pronged dilator into the urethra, I opened the instrument and put the passage on the stretch. I was thus enabled to pass a straight blunt-pointed bistoury into the bladder, and to divide its neck and the urethra to a sufficient extent to introduce the forceps and remove the stone. The incision I made was downwards and outwards on the left side; in fact, in the same direction as in operating on the male. Indeed, I made the operation resemble, as nearly as may be, that in the other sex. The female urethra is the analogue of the membranous part of that passage in the male, and was thus reached at once without an external incision, which is, of course, requisite in the male. This little patient had not a single bad symptom. Freedom from suffering seemed a new existence to her. The urine continued to flow without power of retention when her mother removed her home. I

have since seen her, and have examined the parts as well as the contracted aperture of the vagina would allow. The child is able to retain her water pretty well at night; but in the day time and when up she seems to have no power of retention. I believe that the urethra is still laid open into the vagina, and that though the aperture is gradually contracting, it is still too large to admit of the urine being retained. If this continue, some effort must be made to afford relief; but I trust it may not be needed. The stone—lithic acid—weighed nearly an ounce, and is $3\frac{1}{4}$ inches in its smaller circumference and $4\frac{1}{2}$ inches in its larger.—*Medical Times and Gazette, Nov.* 9, 1861, *p.* 471.

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## 82.—ON LITHOTOMY.

By F. Le Gros Clark, Esq., Surgeon to St. Thomas's Hospital.

Few, perhaps, if any, of the great operations of Surgery, have been the subject of more experiment than that of lithotomy. This was justifiable until certain principles were ascertained, and proved by extended observation and competent authority; but I venture to doubt whether the present state of our knowledge and the general success of the usual lateral operation, warrants further attempts to deviate from the received mode of proceeding; I mean that of making a definite opening through the left side of the prostate, and reaching it by a corresponding opening in the left side of the perineum. It is true that the operation is not uniformly successful; but what capital operation is? and it must be borne in mind that the highest skill cannot secure success, where so important a viscus as the bladder must be laid open. Different surgeons give a preference to various instruments to effect their object; but the matured experience of the most trustworthy bears testimony to the soundness of the principles on which Cheselden's operation is founded.

In the few remarks I propose to make on lithotomy by the lateral section, I will confine myself to the consideration of two methods of reaching the bladder,—that in which the staff is held throughout by an assistant, and that in which the operator takes the staff into his own hand after opening the urethra. I will then state my reasons for preferring the latter operation, and describe the instruments I use.

The former method of operating offers the advantage of leaving both hands at liberty, the one to hold the knife, the other, to guide and assist it in cutting. In this mode of cutting into the bladder, a staff with a large curve and grooved at the side is required, and a dexterous assistant is also needed;

otherwise I apprehend there must be more risk of injuring the rectum from the prominence of the curve which the staff presents in this direction. The urine, also, is prevented from escaping by the introduction of the left forefinger through the opening in the prostate. I have never practised this operation, but am informed by those who have that these are its special recommendations, and certainly they are great.

In that method of operating in which the operator takes the staff into his own hand, and depresses it as he enters the bladder, he is more independent of assistance in this most important stage of the operation; and the co-operation of the two hands thus employed in effecting this object compensates, I think, for the disadvantage of not being able to guide the point of the knife into the bladder. I do not, however, profess to advocate one operation in preference to the other. I have confidence in that method which I have practised, and therefore I adhere to it: whereas I know nothing practically of the other.

The desiderata in the lateral operation are—1. To make an external, free, and well-depending opening. 2. To open the urethra as far back as convenient. 3. To make a definite and sufficient opening in the prostate. 4. To take care that all cellular tissue and fascia intervening between the external wound and prostatic opening be freely divided. The object of a free external opening, carried well down by the side of the anus, is to facilitate the ready drainage of the urine. The urethra should be opened as near to the prostate as possible, as nothing is gained by its division further forward, and there is certainly greater risk of hemorrhage if the bulb be laid open; I suspect, however, that this is more often done than is usually supposed. A definite opening through the prostate I consider very important; and, if that opening be sufficient for the introduction of the forefinger, it is sufficient for the removal of a stone of any ordinary size. But I attach no less importance to a free and entire division of every intervening texture between the prostatic and external openings; and this is best effected as the knife is withdrawn, by making it clear its own way to the bottom of the external wound. In this way a free track for the discharge of the urine is secured, without which there must be risk of lodgment and consequent mischief. This is most likely to occur within the first day or two, for afterwards the spaces between the areolar mesh are blocked by adhesive matter; but at an early period, if the urine have any spot to rest in, immediate mischief results; the infiltration goes on, and from this cause and the inflammation which is set up, from contiguity, in the neighbour-

ing areolar tissue, serious consequences speedily ensue. The simple flow of the urine over the divided track does not seem to entail trouble, but its lodgment, I believe, invariably does.

I use a staff of moderate curve, and grooved on the back. The curve does not exceed two and a-half inches, the rest of the instrument being straight. The urethra is not thus distorted, as I apprehend it must be with a staff of large and long curve, or with a straight staff. I have it held nearly at right angles to the body, with the point within the bladder; I thus cut on the straight part of the staff, or just where the curve commences, and have not to depress it very much as I cut into the bladder. I use, for my first incision, and to cut into the urethra, an ordinary scalpel, and then exchange this instrument for a scalpel, fixed in a strong and firm handle, and with a broad belly, and a button point which runs freely in the groove of the staff. At one time I cut throughout with the same knife—of course a sharp-pointed one; but I am satisfied there is some risk, in doing so, of wounding the bladder; and I regard the few seconds which are lost in this exchange of knives as nothing in comparison with the risk mentioned, although it may be trifling. With the knife I have mentioned, I am able to make a definite and sufficient opening through the prostate, without cutting it as I withdraw the knife: and in this way I believe I combine the chief advantage of the gorget with the greater manageability which recommends the knife. After this section the bladder retains sufficient water to allow of the ready seizure of the stone. I need scarcely add, that the forefinger of the left hand should be passed through the prostatic opening and the stone felt, before the staff is withdrawn: the finger then serves to guide the forceps into the bladder.

After the removal of the stone, it is the custom with some surgeons to introduce a tube into the bladder to secure a passage for the urine. I do not see any objection to this plan, nor do I see any advantage to be derived from it in ordinary cases; the urine will still drain by the side of the tube. But it is very useful where there is hemorrhage, as the wound may be safely plugged around a tube; whereas it would be extremely unsafe to plug the wound without such arrangement. The tube may also be advantageously used where the prostate has been contused by the removal of a large or rough stone, and and its probable swelling, and consequent blocking of the opening, may be anticipated.

The general treatment of patients who are the subject of

lithotomy is no unimportant element of success. It is to be remembered that in opening the bladder in a comparatively healthy person, we inflict a serious organic injury, and that a certain amount of shock must be expected as the consequence, followed by reaction. The skin will become heated, the pulse quickened, and the tongue furred. This condition is to be looked for, and not regarded with apprehension. The previous evacuation of the bowels allows of their being left at rest for two or three days afterwards. The diet should be simple and unstimulating for a time; in some cases, however, stimulus is required early, especially where the patient has been habituated to it. Gin is a favourite remedy among the poor, when anything is amiss with the urinary organs, and even young children are not unfrequently dosed to a considerable extent with it. I have often noticed some little tenderness in the iliac fossa, without any further symptoms to create alarm. I have occasionally had hemorrhage to control: this has been effected either by pressure on the pudic artery, or by plugging the wound after the introduction of a tube. In one case of secondary bleeding, induced by continued vomiting after inhaling chloroform, I nearly lost a little child. In one instance a communication was established between the rectum and wound, in consequence of laceration by the large angular fragments of a hard stone, which broke in the forceps: this wound entirely closed. And in one case, where the stone was very large, and the patient deformed, abscess of the prostate burst into the rectum about a week after the operation. The communication between the rectum and bladder in this case was permanent, and too high up to attempt any operative interference. The patient, however, informed me that he was not seriously inconvenienced by this false passage. Beyond the above, and the loss of a solitary case—an infant of twenty months with a disorganised kidney—I have no special experience to record: all of my other cases have recovered. The largest stone which I have removed—indeed, here are two of nearly the same size—weighs more than a quarter of a pound, and the smallest, which I have also brought to show you, weighs only five grains. Yet these small stones often occasion great suffering; and I may here remark that, as a rule, smooth stones, such as the lithic acid, are the source of greater pain than rough ones, such as the mulberry. I suppose in one diathesis the bladder must be more irritable than in the other, or it becomes more protected by a copious secretion of viscid mucus. I may also observe that the patients who have suffered most pain, *cæteris paribus*, make the best recovery.—*Medical Times and Gazette, Nov.* 9, 1861, *p.* 472.

## 83.—ON VARICOCELE.

By Henry Lee, Esq., Surgeon to the Lock-Hospital.

[The chief symptoms produced by a dilated condition of the spermatic veins are pain and a feeling of weight and dragging in the affected side, and defective nutrition of the testicle which becomes softer than natural, and sometimes it becomes permanently atrophied.]

In whatever part of the body pain and imperfect nutrition occur, in consequence of a varicose condition of the veins, they may be remedied in the same way; namely, by obliterating those vessels which are larger than natural, and by thus compelling the blood to pass by those channels only which retain their natural dimensions.

The plan adopted for this purpose is simple and effectual. A needle is introduced beneath the vein or veins to be obliterated, and a 8-ligature is passed over its extremities. The vein or cluster of veins is thus included between the needle which is below it, and the ligature which is over the skin. The ligature is then tied so as to produce a slight degree of pressure on the vein, and by this means its cavity is temporarily closed by acupressure. Another needle is then passed under the vein at about an inch distance, and the vessel is there closed in like manner. The vein or cluster of veins thus included between the two needles is entirely separated from the rest of the circulating system, and may then be divided or otherwise obliterated without risk. Subcutaneous section of the veins is generally all that is necessary, and is preferable to any other mode of operating, as it effectually obliterates the vessels without leaving any open wound.

At the expiration of about four days, when union is established in the divided parts, the needles are removed, having served their temporary purpose. In three or four more days, the patient may usually go about his ordinary occupation.

The operation now described was first performed by me for enlarged veins of the spermatic cord some years ago, upon a patient in the Lock Hospital; and the success in that case was so complete that I have performed the same operation upon a a very considerable number of patients since.

After an operation such as is now described, the divided veins become puckered up in a hard knot, which effectually prevents the veins from again becoming enlarged at this part. The divided veins are permanently obliterated, and the circulation is carried on by those that have not been interfered with.

The pain which arises from the distension of the veins ceases as soon as the union is complete; and in several cases in

which atrophy of the testicle had taken place, marked increase in the size of the gland has followed the operation.

There is one complication sometimes met with which the simple subcutaneous division of the veins does not remedy: this is a pendulous condition of the testicle. The testis sometimes hangs so low that it interferes with some of the motions of the body, and is liable to be injured by any sudden exertion. In such instances, there may or may not be a varicose condition of the veins, but the skin and subjacent tissues are always redundant. For this troublesome complaint, the late Mr. Briggs, in the old Lock Hospital, occasionally removed a considerable portion of the skin of the scrotum, and the cicatrix left maintained the testicle in something like its natural position. This operation succeeded well enough when the case was not attended with enlargement of the veins; but when it was, the removal of the skin could have little or no effect upon the varicocele. At the time to which I refer, no one thought of cutting deeper than the skin, as no means were then in use which would effectually control hemorrhage from the spermatic veins in case they were wounded. Mr. Briggs's operation, then, was well adapted for a case of pendulous testicle where the veins were not enlarged, but not for a case accompanied by varicocele. A case presented itself some time ago, in which the testis hung so low, that when the patient lay upon his back, it would hang over on the outer side of the left thigh. There was in this instance, a well-marked varicocele. Knowing that I had the means by acupressure (which I have now employed in this way for upwards of eight years) of controlling the dilated veins, it appeared practicable to combine Mr. Briggs's operation with that for obliteration of the veins. Accordingly, the needles were introduced as far apart as possible, and after the veins were secured by the 8-ligature passed over the ends of the needles, the intermediate portion of skin, together with subjacent tissues, containing the enlarged veins, was removed, leaving a very considerable gap. No hemorrhage occurred. The needles were then drawn towards each other, and by this means the edges of the wound were brought together and maintained in position. The wound healed in about three weeks.

The operation for varicocele by simple subcutaneous incision has now been frequently performed; and the only inconvenience that has, in any instance occurred, has been some hemorrhage into the areolar tissue in the neighbourhood of the divided veins. This depends upon the fact that a vessel is sometimes divided which has not been secured by acupressure. In order to avoid this occurrence, care should be taken to compress the same veins above and below the incision, and not to divide any that are not thus compressed. If one of the spermatic arteries be

divided which has not been included between the upper needle and its ligature, then some blood will escape, and a swelling will be formed above the line of incision; if, on the other hand, a vein be divided which is not included in the lower ligature, then the effusion of blood and the swelling will take place in the lower part of the scrotum. The remedy in either case is the same. As soon as the swelling begins to appear, and there is good reason to believe that it depends upon effusion of blood, a fresh needle is to be introduced beneath the bleeding vessel, and 8-ligature passed round its ends. A very moderate degree of compression is sufficient. If it is an artery that is bleeding, the fresh needle is introduced above the subcutaneous incision; if it is a vein, the needle must be introduced below this point. But in either case, care must be taken that the bleeding vessel is included. If, in the first instance, the needles and the incision are carried on to the same depth, and include only the same vessels, then no hemorrhage will occur.

In all the above mentioned proceedings, care must be taken to avoid the vas deferens. This may always be recognised by its peculiar hardness and irregular surface, and can be easily separated from the veins before the needle or the knife is passed beneath them.—*British Med. Journal, Dec.* 7, 1861, *p.* 602.

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## 84.—ON THE RADICAL CURE OF VARICOCELE BY SUBCUTANEOUS LIGATURE OF THE SPERMATIC VEINS.

By Jolliffe Tufnell, Esq., Surgeon to the City of Dublin Hospital.

Velpeau's plan was to "introduce two pins, one before and the other behind the veins, which are then compressed by carrying a ligature around the extremities of the pins, the varicocele being included between them." After this, was Velpeau's simpler plan of passing a pin behind the veins, and working a twisted figure-of-8 suture over them; then we have the twisted sutures of Sir Benjamin Brodie, modified by the subcutaneous incision of the veins between them, as practised by Dr. Lee; the passing of threads through the veins as setons, and their obliteration by the introduction of a heated awl or wire, as suggested by Mr. Fergusson; and the double ligature of Mons. Ricord. All of these have severally been employed; and the very variety must be sufficient to prove how unsatisfactory in the majority of cases had the previous modes of treatment proved, and how each surgeon, in consequence, had endeavoured to obviate pre-existing objections.

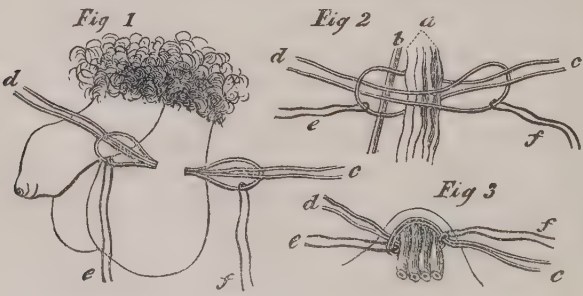
It was with this view that I adopted the annexed modification,

the success of which will, I trust, justify its general use. The plan I advocate is simply an improvement upon Mons. Ricord's double ligature, by adding to the double loops for the enclosure of the veins a pair of *retracting guides*, by which the surgeon is enabled to withdraw the compressing medium at any moment, thus holding as it were a check-string upon inflammation in his hand, producing an adhesive phlebitis, and stopping short of the suppurative form.

With this latter view, I employ also fine iron-wire as a substitute for the ligature of silk; metal being less irritating to the parts engaged.

Before resorting to the plan which I am now about to advance, I had found that in each instance in which I had used Ricord's loops, suppuration in the scrotum occurred. Since employing the retracting guides, no such annoyance has taken place.

The method, then, that I advocate is the following:—In any given case of varicocele that comes before me, I interrogate the individual, and ascertain whether any remedial means have as yet been adopted; and, if not, I recommend palliative treatment, viz., attention to the bowels, so as to prevent, by regularity of action, any lodgment in the descending colon: the use of cold water sponging night and morning, to constringe the vessels and dartos of the scrotum; and a bag truss. I do not advocate the use of pressure to the dilated veins at the external abdominal ring by means of the spring truss; or the puckering in of the loose skin of the scrotum, and the confining it in a steel ring, as sometimes adopted—my experience being to the effect, that these remedies only irritate the patient, and that they are both inferior in action to a well-fitting common bag truss. If these simple measures fail to afford such an amount of relief as will satisfy the patient, and he persists in having more effectual means adopted, then I employ the following



proceeding, after satisfying myself of the non-existence of organic disease of the kidney :—

I prescribe an aperient, to evacuate the contents of the intestines, of the compound powder of jalap combined with calomel. I confine the individual to bed for a day, and then deligate the veins in the manner recommended by Ricord, and illustrated in the accompanying sketch, taken from Bernard and Huette's work, modified as will be described.

An assistant separates and holds aside the vas deferens. The bundle of veins is then isolated, and taken up in a fold of the skin, the first loop of wire being carried behind the veins (Fig. 1, *d.)* A second loop of wire is then passed in the opposite direction, in front of the veins, through the same orifices as the first (Fig. 1, *c*). The bundle of veins (Fig., 2 *a)* is thus included between the two loops, the free extremity of each wire being passed through the loop of the other, as seen in Fig. 2, *c,d.* The wires are then drawn in opposite directions, until about as much of each loop remains projecting from the scrotum as is seen in Fig. 1—and the amount of the projection of the loop made equal on either side. Two portions of iron-wire are now taken, each four inches in length, and doubled in the middle as closely as possible. One of these is passed through either loop, and drawn to its centre. The ends are then twisted. These wires form the *retracting guides*, and give the surgeon the most complete control over the vessels of the cord, enabling him at any moment that he wishes to take the ligature from off the veins, and remove all source of irritation from within the scrotum. The main wires (Fig. 3, *d, c)* are now to be drawn upon equally and *forcibly* until the vessels of the cord are completely strangulated. This done, the ends of the wires are brought up and attached to a ratchet, and thereby kept tensely strained; or else twisted around the extremities of a piece of strong watch-spring, bent back into an arc, the effort of which, to restore itself, keeps up continuous tension upon the cord.

With reference to the length of time during which it may be necessary to maintain this constriction, in order to produce sufficient adhesive phlebitis, and yet avoid the suppurative form, this must entirely depend upon the constitution of the individual. The guides for the surgeon will be the density of the swelling of the veins below the ligature, between the epididymis and the wires: the feeling of firmness to the touch; and a slight blush upon the integuments of the scrotum. These symptoms, conjoined, will denote that such a degree of inflammation has been excited as will produce obliteration of the venous trunks. The main wires are now to be cut across, and the ratchet or steel spring detached. This done, the figure-of-8 loop

encircling the veins is to be opened, by withdrawing the wires through the medium of of the retracting guides. All source of irritation being now removed, further inflammation is prevented. No pus is formed in the veins, which can be carried up into the circulation; or external to the veins, in the scrotum, which can give rise to the formation of abscesses in its cellular tissue. A little lead-wash to the scrotum, and rest upon the back in bed for a few days, with low diet and attention to the bowels, completes the cure. The patient, before rising, should be fitted with a suspensory bandage to support the parts. He may then resume his ordinary business or occupation.—*Dublin Quarterly Journal, Nov.* 1861, *p.* 333.

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## 85.—THE WIRE SETON IN HYDROCELE.

By Dr. James D. Gillespie, Surgeon to the Royal Infirmary, Edinburgh.

[Dr. Gillespie was at first led to make trial of the wire seton on theoretical grounds, believing that adhesive inflammation only was likely to be excited by the introduction of metallic wires. The sequel proved that violent and indeed dangerous suppurative action might arise from the employment of such a seton. He says:]

Professor Simpson instituted a number of carefully conducted experiments, to show the impunity with which metallic substances might be incarcerated in living tissues; and, reasoning from analogy, concluded that wires passed through a hydrocele were likely to cause merely adhesive inflammation, and thus effect a speedy and simple cure. The result of extended investigation into this plan of treatment has proved that hydrocele may be cured, and both speedily and easily cured, by such a method; but it has no less satisfactorily established the fact, that a certain, and no small per-centage, of cases, notwithstanding every precaution, will suppurate.

[After giving a narrative of 10 cases treated by this method, Dr. Gillespie makes the following remarks:]

The wire seton, when all due care is taken, may speedily and safely effect a radical cure in hydrocele; but it is also as unquestionable a fact, that alarming suppuration may ensue, though the utmost possible attention has been bestowed on the case. Several of the cases I have narrated establish the fact that suppurative action may come on days after all fear of such a contingency had passed away. Indeed, in most of the cases detailed the wires were not retained so long as was deemed expedient in Dr. Young's patients. Here I may allude to one

reason given by Dr. Young for failure in my first case, when I was obliged to have a second time recourse to the seton. He says, "This case might have succeeded after the first operation, had the wire seton been retained longer, and five wires doubled used in place of two." Unfortunately for Dr. Young's suggestion, the printer had mistaken two for ten, and *five wires doubled* were exactly the constituents of the seton! How retaining these longer would have saved the patient from the very dangerous suppuration that ensued, I leave it for himself to explain!

It is necessary, however, before condemning the use of the wire seton in hydrocele, to show that a better and safer method exists, which brings me to a comparison between this mode of procedure and the use of injections.

Injection of almost any stimulating fluid may cure a hydrocele; and if time permitted, I could point out numberless substances that have been employed, and have had their day of notoriety and praise, but for my present purpose it is not necessary to allude to any other fluid than the tincture of iodine, which has deservedly usurped the greatest share of favour in the present day.

It is difficult to collect facts with regard to the efficacy of this mode of treatment, as at present employed, for it is not now apparently considered of sufficient importance to write special notices about. What I believe to be much the best method of employing it is, to inject from half a drachm to two drachms of the tincture slightly diluted, and allow it to remain in the sac. This plan was first proposed by Dr. (now Sir J. Ranald) Martin, of the East India Company's service, has been advocated by Professors Liston, Syme, and Ferguson, and other eminent surgeons, and is the method which has been generally adopted in the Royal Infirmary here. It is now about twenty years since I first saw this mode of injection used in hydrocele, and I cannot recall any one case of suppuration resulting from the operation, though I have a vague impression that such an unusual and unfortunate complication once did occur. That sloughing of the scrotum has sometimes resulted I admit; but I am satisfied, that such an accident was occasioned by the mode, which was formerly practised, of distending the sac with diluted tincture, and then drawing it off,—occasionally some of the injection escaping into the cellular tissue, and causing the disastrous consequences to which I have alluded.

As regards the efficacy of injections, it must be said, that sometimes, but very unfrequently, they fail; but the patient is not in a worse state than he was before, which cannot be

said with justice of the wire seton, for when too much inflammation arises, most alarming symptoms may supervene.

I trust I may not be mistaken as regards my hostility to the wire seton. I am fully impressed with the fact, that metallic wires are not likely to induce suppuration; the principle of the operation is correct, so far as it goes; but certain counteracting circumstances have been overlooked, which I believe have mainly tended to excite suppurative action, and which no skill on the part of any operator can prevent. When a seton of any kind is passed through a shut sac, of such an irritable nature as the tunica vaginalis, and allowed to remain for hours, communication with atmospheric influences must result, and I believe that this is the true reason, quite independent of what the seton is constituted, which may give rise in some cases to suppuration.

The puncture made by the trocar and canula soon heals, shuts up the cavity, and thereby explains, I should say, the comparative impunity from suppuration, when injections are employed. If metallic substances are to be used for the cure of hydrocele, it therefore appears to me that a safer method would be, to draw off the fluid by the ordinary trocar and canula, and then insert through the puncture a probe, or some small metallic body. This in time might excite sufficient adhesive inflammation, and at all events be only half as likely as the seton to cause suppuration. In the time of Pott, a somewhat similar idea was proposed, but laid aside as inconvenient and sometimes dangerous. The hydrocele was tapped in the usual way, but the canula was allowed to remain in the sac till sufficient inflammation was supposed to have ensued. But the canula being a hollow body, enabled the interior of the cavity to communicate directly with the external air, a very important disadvantage, I should say.

I merely throw out this suggestion for those who are dissatisfied with the treatment by iodine injection; for I shall conclude by stating, that I am myself perfectly well contented to abide by that long valued and, in my experience, sufficiently successful and safe operation. — *Edinburgh Medical Journal, Jan.* 1862, *p.* 630.

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86.—*How to Relieve Pain in Diseased Bladder.*—The presence of urine, and more especially of uric or phosphatic calculi or concretions at the *bas-fond* of a diseased bladder, sometimes produce violent pains in the bladder, and render all movement painful. In such cases if the patient be placed on an inclined plane, which, by raising the lower part of the pelvis, throws the contents of the bladder towards the upper and posterior part of

the cavity (which is much less sensitive), relief is almost immediately produced, even though other means have been tried in vain.—*Rev. de Thér.; and British Med. Journal, Feb* 1, 1862, *p.* 119.

## SYPHILITIC AFFECTIONS.

### 87.—SYPHILIS CONVEYED BY THE VACCINE LYMPH TO FORTY-SIX CHILDREN.

[The unfortunate occurrence to be described occurred at Rivolta, in Piedmont. The account is taken from an Italian Medical journal, and the facts are authenticated in a letter to the editor of the Lancet, by Dr. Pacchiotti.]

Towards the latter end of May last, M. Cagiola, a surgeon, vaccinated Giovanni Chiabrera, aged eleven months, and in good health, with lymph obtained in a tube sent from Acqui. The operation was performed in the ordinary manner, and with, as M. Cagiola affirms, a very clean lancet. On the tenth day after this, forty-six children were vaccinated with the lymph contained in the vesicle of the child Chiabrera; and ten days after these latter operations, seventeen other children were vaccinated from the lymph of one of the forty-six infants just mentioned.

Hence we have sixty-three vaccinated children, forty-six of whom were more or less affected with syphilis within two months after the first operation. In the first series of forty-six vaccinations there were thirty-eight cases of syphilis, besides little Chiabrera, the child vaccinated with the lymph contained in the tube; and in the second series, comprising seventeen infants, seven were affected. The child Chiabrera was in a state of marasmus on the 7th of October, and the infant from whom the second series of seventeen had been vaccinated, died a month after the operation.

These facts having come to the knowledge of the Medical Congress at Acqui, from statements made by Dr. Ponza, it was agreed that a committee, elected from amongst the members of the Congress, should proceed to Rivolta to inquire into these melancholy occurrences. From the able report of Dr. Pacchiotti we extract the following particulars.

The investigations of the committee were considerably aided by the unwearying exertions of Dr. de Katt, practising in the village. It has been found that of the forty-six children affected with syphilis, the cases of only twenty-three could be accurately noted, as the parents of the children neglected to call in medical aid at the proper time. These twenty-three cases were,

however, sufficient to enable the committee to come to a clear diagnosis. In the whole forty-six cases, the symptoms of syphilis appeared, on an average, on the twentieth day after vaccination—namely, varying from ten days to two months. Sometimes the vaccine vesicle, just on the point of cicatrizing, inflamed, and became surrounded with a red, livid, and copper-coloured areola, and then spread and suppurated anew. At other times when the cicatrix was complete, an ulcer would form upon it, the crusts of which would fall off and fresh ones be produced. With some children the vesicles looked bad from the first, and were accompanied by a general eruption, which the country people considered as small-pox, and the characters of which the medical men of the neighbourhood were not always able to ascertain. On the 7th ult., it was discovered that seven children had died without treatment, and before attention had been directed to this unfortunately fast-spreading contamination; three were in danger, and fourteen recovering, after having been subjected to a specific treatment. Thirty-eight at that period were under treatment, which consisted of frictions with mercurial ointment in the groins, axillæ, and on the limbs, with small doses of iodide of potassium in sarsaparilla syrup.

The principal symptoms noted by the committee were: mucous tubercles on the verge of the anus and genital organs; sores on the lips and fauces; swelling of the lymphatic glands in various regions; syphilitic eruptions of different kinds; loss of hair; secondary ulcerations of the prepuce; deep tubercles of the cellular tissue; gummy tumours, &c. Two children out of the twenty-three were in a wasting condition, and suffering from syphilitic cachexia; while some of the mothers had mucous tubercles on the nipples. In fact, the twenty-three cases are carefully related in the report, all the children having been seen by the members of the committee.

As to how the disease thus came to spread amongst these infants, the committee refrain from coming to a hasty conclusion, and ask for time to solve the mystery; the more so as these facts tend to no less than a complete upsetting of opinions hitherto held as very trustworthy. Thus the belief of two diseases not having the power of developing at the same time upon the same individual falls to the ground, as well as the non-contagious nature of the secondary symptoms of syphilis.

Dr. Pacchiotti, the author of the report, indulges in commentaries on this sad case, and throws out, with extreme humility, various explanations, though trusting completely to none. He invites discussion and reflection on the phenomena

which have been observed. Nor does he fail to record that such transmission has been before noticed. Dr. Parola has mentioned in his work "On Doctrines connected with Vaccination," a case reported by Tassani, of Milan, in which a boy, whose father had at the time secondary sores on the scrotum, was vaccinated from a healthy child. From the vesicle of this boy fifty-six children were vaccinated; out of whom, thirty-five were, in a few months, syphilitic, and had diseased their mothers. On the other hand, it should be noted, that lymph from eight of these thirty-five syphilitic children was used to vaccinate a second series of thirty-four, and *none* of the latter showed any syphilitic symptoms. Another case (which was brought before courts of justice) runs thus:—In 1846, many revaccinations took place in the town of K——, where a surgeon revaccinated about ten families on account of an epidemic of small-pox; and the punctures, in three or four weeks, degenerated into syphilitic ulcers, followed soon afterwards by secondary eruptions. Hübner, in 1852, vaccinated thirteen children; of whom the greater part became syphilitic, though the rest escaped. Experiments have been undertaken by Pitton, Boucher, Ceccaldi, and Lecoq, which prove the transmission of syphilis through vaccination; whereas other experiments made by Schreier, Montain, Bidart, and Taupin show, on the other hand, that vaccine lymph obtained from a child, evidently labouring under hereditary syphilis, produced no evil effects upon those vaccinated with it. The reporter further alludes to an important thesis of M. Viennois, "On the Transmission of Syphilis by Vaccination;" and to the chapter on the same subject in the book of M. Rollet, of Lyons, entitled "Clinical and Experimental Researches on Syphilis."

From the facts related above, Dr. Pacchiotti deduces the following rules:—

1. Examine carefully the child from whom the lymph is taken.
2. Try to learn the state of the parents' health.
3. Choose, in obtaining the lymph, such children as have passed the fourth or fifth month, as hereditary syphilis, in general, appears before that age.
4. Do not use the lymph after the eighth day of the existence of the vesicle, as the lymph on the ninth and tenth days becomes dull by mixture with pus, which latter may be of an infectious nature.
5. In taking the lymph with the lancet, avoid hemorrhage, as there is less danger with pure and transparent lymph.
6. Do not vaccinate too many children from the same supply. —*Lancet, Nov.* 16, 1861, *p.* 485.

## 88.—CASE OF SYPHILITIC DISEASE APPEARING AFTER VACCINATION FROM A SYPHILITIC CHILD.

By Dr. N. J. Haydon, Bovey Tracey, Cornwall.

In the summer of 1843 I was called, as the Medical Officer having charge of the sick poor of the parish and borough of Bodmin, Cornwall, to attend two young children of different families, and living about a quarter of a mile distant from each other. The children were each of them from 9 to 10 months old. The history of their illness being precisely similar, one description will apply to both. On the first introduction of the compulsory vaccination system, the Guardians of the Bodmin Union entered into a contract with one medical man to perform the vaccinations for the whole Union. This gentleman, in the discharge of his duty of Public Vaccinator, attended at the appointed room in Bodmin, and on that particular day vaccinated these two children, taking lymph from the arm of a child he had vaccinated the preceding week; he appeared (from the most careful personal investigation which I made of this matter at the time) to have vaccinated no other than those two children on the day in question, and to have taken lymph from no other child, but the particular one alluded to. Between the second and the third week after the vaccination had been performed, I first saw the children. They were literally covered with large phlysacious pustules, the irritation was most intense, and, between rubbing and scratching, the head and nates were raw and ulcerated. No treatment had any avail, and both these poor children died a few days after I first saw them. Being at once impressed that the disease of these children was syphilitic, I made the most careful investigation I could into the whole matter. In both families there were other older children perfectly healthy. The parents in both cases, were labourers, of most healthy appearance, and of good character; were then, most certainly, and I have no cause to doubt ever had been, free from syphiltic taint. The respective mothers of both children carried their infants themselves to be vaccinated; they saw the operation performed, and they saw the child from whom the lymph was taken; they told me the name of the child, and where it lived. As medical officer of the borough of Bodmin, this child and its mother were both known to me. The mother had been, and in fact, then was, on the town, and I had attended her for syphilis. At that very time she was diseased. I examined her child; it had, as far I could see, no primary syphilitic sores, but it had numerous syphilitic eruptions about its body, pustules about its nates and trunk, and copper-coloured leprous spots. The child was between two and three years old, and under treatment it recovered. The public vaccinator lived at a

distance from Bodmin, and could not have known the character of the parties from whom he took the lymph.

Since the above case occurred just nineteen years have passed, and in that period I have vaccinated at the least 4000 persons; but I have never witnessed an analogous case. It has occurred to me three times at the least to have to vaccinate children whose parents I knew suffered from syphilis, but no peculiar difficulty followed, and the children, *quoad* the vaccination, perfectly recovered. I would never, however, either myself attempt, or recommend any other person to attempt, the converse, and vaccinate a healthy from a diseased child. Whether disease is capable of transmission by the lymph alone, or whether a portion of blood from the diseased subject must also be introduced so as to produce disease, I cannot say; but it is most undeniably true, that in all quarters both amongst the rich and amongst the poor, there is a strong belief that any disease which may exist in a given child can be communicated to another given child by vaccinating the one from lymph taken from the other.

Very soon after the occurrence of the cases above detailed, and if I recollect rightly, in consequence of them, the vaccination system in the Bodmin Union was altered, and each medical officer of a district was appointed the public vaccinator for his own medical district,—so as to insure as far as possible a correct knowledge on the part of the vaccinator of each subject before him.—*Med. Times and Gazette, March* 29, 1862, *p.* 316.

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## 89.—ON THE CALOMEL VAPOUR BATH.

By Henry Lee, Esq., Surgeon to the Lock Hospital.

[For many years back the author has discontinued the use of mercury internally, in the treatment of syphilis at the Lock Hospital. Sir Benjamin Brodie says, "you may patch up the disease by giving the remedy internally, but it will return over and over again."]

It will, indeed, seldom happen that in private practice the surgeon can induce his patient to continue the internal use of mercury sufficiently long to cure real syphilis. The patient either "catches cold," or has an attack of diarrhœa, or finds that he is losing flesh, or feels languid and uncomfortable, and incapable of much bodily or mental exertion; and then he discontinues his medicine, and, feeling subsequently better, is convinced that he acted properly. But, as observed by Sir Benjamin Brodie, if, in a case of well marked syphilis, a short course of mercury only be given, "the disease is sure to return; you have then to repeat it; and again the disease reappears. Thus, you have repeated courses; and not only is the system

weakened by the mercury, but the disease, when it does return, assumes a more formidable character than before." (*Lectures on Pathology and Surgery*, pp. 248-9.)

To remedy the evils attending the prolonged internal use of mercury, the plan of introducing the medicine into the system through the skin by means of mercurial frictions was introduced; and although this plan, like other modes of administering mercury, was carried to a great excess, and much abused, yet, as practised by the late Mr. Pearson, when, by mature experience, he had learned the proper use of the remedy, it proved by far more successful than any other plan previously employed.

By introducing mercury into a patient's constitution in this way, by inunction, its deleterious action upon internal organs is avoided. The amount absorbed into the blood produces its influence equally throughout the system, and is not conveyed direct to the liver, as when the medicine is administered internally.

But, great as the advantages of the inunction of mercury are as compared with its internal administration, it, nevertheless, is attended with certain inconveniences which prevent its very general use. The inunction of mercurial ointment, so as to ensure the proper effect of the remedy, requires considerable labour and perseverance on the part of the patients; and it is with difficulty that they can be induced to continue its use for any length of time. It sometimes produces a pustular eruption on the skin, which proves troublesome. It is a dirty remedy, and patients in the upper class will avail themselves of any excuse to avoid its use.

Fumigation of the surface of the body by means of certain mercurial preparations, possesses the advantages of inunction without some of the objections to which this is liable. But, like other modes of using mercury, it was tried in a variety of ways before a safe and efficient mode of administration was adopted.

In the years 1786-7, Mr. Pearson had a fumigating machine constructed according to the directions given by M. Lalonette. This apparatus, although it was thought to be new at the time, differed in no material respect from that described by Nicholas de Blegny in the year 1683.

Mr. Pearson made a considerable number of experiments with this fumigating machine, and found that the gums became turgid and tender very quickly, and that the local appearances were sooner removed than by the other modes of introducing mercury into the system. But, to counterbalance these advantages, it was found that the mode of treatment adopted induced debility, and that ptyalism was often excited rapidly, and at an early period, Mr. Pearson found that he was, consequently, obliged often to discontinue his course of treatment.

Sir Benjamin Brodie's experience coincided with that of Mr. Pearson. He found that it was difficult to regulate the mercurial action; and he observes that by using mercurial fumigation "you may affect the system too much or too little; and you may be taken unawares by the patient's gums becoming all at once excessively sore." *(Lectures on Pathology and Surgery*, p. 246.)

From observations and comparative experiments which I made at the Lock Hospital during the years 1855-6, I feel satisfied that the irregular results noticed by Mr. Pearson and by Sir Benjamin Brodie, depended upon the difference in the chemical composition of the powder used for the purposes of fumigation, both before and after it was raised into a state of vapour. The gray oxide of mercury (the preparation generally used) varies much in colour as obtained at different shops. Some specimens will not volatilise at all at the temperature produced by an ordinary spirit-lamp under a metallic plate. Other specimens of a lighter colour volatilise quickly enough. When the darker specimens are sublimed, they are decomposed in a greater or less degree. A deutoxide of mercury is formed by the addition of an equivalent of oxygen from the air; and if the temperature be much increased, then the oxygen is driven off altogether, and metallic mercury is sublimed. Under these circumstances, with a mercurial preparation of uncertain composition, and undergoing different changes according to the degree of heat applied, there is no wonder that very different effects should have been produced in different cases. With some samples of the gray oxide it is necessary to use a considerable quantity of the powder in order to ensure any effect; with other samples, the same quantity produces much more action than is desirable. The gray colour of the powder depends upon the admixture of a certain proportion of calomel with the protoxide, and the temperature at which any particular specimen will volatilise will depend upon the relative proportions of the two. The bisulphuret of mercury, again, which has been extensively used for the purposes of fumigation, gives off, when exposed to heat, a vapour, probably the sulphurous acid gas, which has sometimes caused very considerable irritation of the lungs; and all forms of mercurial fumigation have, in consequence, been condemned. Now, all the inconveniences above-mentioned may be avoided with certainty, by using a mercurial preparation which is always of the same chemical composition, which does not irritate the lungs, and which is not liable to be altered by an increase of temperature. Such a preparation is calomel. We have here a definite chemical compound. It is altered in composition, neither by heat, nor by moisture, and may be relied upon when used for the purposes of general fumigation, for

producing its action, as certainly as any medicine administered internally. A very small quantity (as compared with the other mercurial preparations) will ensure the required effect, and this may be regulated and controlled with great precision.—*British Medical Journal, Jan.* 18, 1862, *p.* 53.

## DISEASES OF THE SKIN.

### 90.—ON RINGWORM AND VEGETABLE PARASITES.

By Dr. Thomas Hillier, Assistant-Physician to the Hospital for Sick Children.

Mr. Hogg maintains that parasitic vegetation is not the cause, but the result of disease, on the following grounds:—"1. The general law that vegetable parasites only attack bodies in a state of lowered vitality." "2. The growth of fungi is not necessarily pathognomic of a special disease, because they have been observed in all kinds of chronic skin-diseases." Mr. Hogg says he has discovered a fungus in psoriasis, lepra, eczema, spilus, ichthyosis, and lichen. "3. Competent observers have not been able to find them in the diseases which they are believed to engender." "4. As to the results of inoculation, the experiments are too few and irregular to afford any basis for argument *pro* or *con*. (*Trans. Microsc. Journal*, 1859.)

In reply to these statements, it may be said that, in tinea tonsurans and tinea favosa, at any rate, all competent observers find a fungus, with the exception of Mr. Erasmus Wilson, who sees the phenomena, however, but interprets them differently. In the chronic diseases to which Mr. Hogg refers, if a fungus sometimes exist, its presence must be regarded as accidental, and its extent not all proportionate to the amount of disease, being entirely absent even in aggravated cases of these affections. I have searched in vain for a fungus in several cases of psoriasis and lichen. But in those diseases in which the fungus is never absent, and where the changes produced by the microscope are those most obvious both to the naked eye and to the microscope, we may certainly give the parasite a more prominent place in the pathology of the disease; and it is only reasonable to regard it as the determining cause of the disease, whilst we admit constitutional and local states as predisposing causes.

Tinea tonsurans and tinea favosa cannot exist without their respective fungi. Pityriasis versicolor is always accompanied by a fungus; but pityriasis rubra and pityriasis capitis exist usually, if not always, without a fungus. Herpes circinatus is commonly accompanied by a fungus, and probably some cases are due to the fungus; whilst other cases of this affection are

found without the fungus; so that we connot say positively that it is always a parasitic disease. Sycosis is probably always parasitic in its origin. In reference to alopecia areata or tinea decalvans, some observers, including MM. Gruby, Bazin, Hogg, and Lowe, discover a fungus which has been called *microsporon Audouini*. Dr. Jenner and Mr. Hutchinson fail to detect it, and I have been equally unsuccessful. That a fungus *sometimes* attacks the hairs in these cases, must be admitted on the authority of such observers as those mentioned; but we must also maintain that it is frequently absent; so that I would class this disease with the non-parasitic diseases, in which a fungus is occasionally found, but does not determine the existence of the disease.

The evidence derived from treatment is very strong in favour of the parasitic theory, although it must be admitted that this argument applies partially in reference to some diseases where no parasite has been detected; namely porrigo larvalis, or the contagious impetigo of the scalp. Alopecia areata, too, will generally yield to solution of sulphurous acid. This may, howbe due to its irritant properties, and not to its power of destroying vegetable life; as blistering is more efficacious than the sulphurous lotion.

Parasiticides will, I believe, in all cases cure tinea favosa, tinea tonsurans, sycosis, and pityriasis versicolor. The length of time required to cure tinea tonsurans is owing to the impossibility of getting the parasiticides to the bottom of the hair-follicles in which the fungus has embedded itself. At the *very outset*, it may be cured rapidly. Newly attacked parts, before the hairs were much attacked, in many of my cases, were cured in a few days.

Dr. Lowe (*Botan. Trans.*, *Edin.*, 1858) endeavours to prove an identity between the fungus in tinea favosa and the *aspergillus glaucus*. He is inclined to concur with Dr. Fox as to the common origin of all the human fungi. He says that *trichophyton tonsurans* is only the sporula form of *achorion Schönleinii*. He placed a mass of cells from favus in a solution of brown sugar, and at the end of five weeks he found complete plants of *aspergillus glaucus*, with the fructification in its characteristic form. Remak, who made similar experiments on the development of the achorion obtained no results from favus-sporules placed in a saccharine solution, but found that those placed on apple germinated and put out processes in twenty-four hours; but on the *sixth* day the apple was covered with *penicillium glaucum*. He says: "At this time, the surface of the apple changed its colour in a surprising manner to brown; there appeared on the entire surface a rapid growth of *penicillium glaucum* or other kinds of mould, which very much interfered with the

distinguishing of those fungi which belonged to the favus from those which belonged to other kinds of mould that has sprung up from unobserved sporules." He also states, that on the fourth or fifth day he had observed in the interior of the piece of crust a powdery substance evidently arising from a decomposition of this favus-fungus. In the saccharine solution he found the crust of favus "take the form merely of slender filaments of mycelium; and by the side of it a powdery mass, which probably owed its origin to the decomposed parts of the favus-fungus." (*Diagnost. und pathogenetishe Untersuchungen*, Berlin, 1845, pp. 200-2.) Dr. Lowe thinks that the favus in Remak's experiments originated the *penicillium;* and that it, as well as *aspergillus*, is capable of originating the disease.

Is it not much more probable that the fungi in both cases were developed, not from the sporules placed there by the experimenters, but from unobserved sporules, such as exist nearly everywhere? As Dr. Lowe says, the *aspergillus* is an extremely common fungus growing upon decay; and Remak took the view without hesitation.

*Diagnosis* is not difficult; at any rate, in the second stage. The roundish patches with clipped hair, roughened with branny scales and prominent hair-follicles, are phenomena not found in any other complaint. The smoothness of the patches distinguishes alopecia areata and the faintness of the hair-follicles; if any hairs exist on the patch, they are pale, and of the most downy description, not thickened and dark in colour.

The thick yellow crust of favus is characteristic, as is usually the peculiar smell. In the very onset of tinea tonsurans, you may not be prepared for so serious a disease, if you are not looking for it; erythematous rings, or raised spots, with branny scales, do not occur on the scalp from any other cause, so far as I know.

If the scalp have been much irritated, pus may be formed, and scabs cover the diseased patches; but there will generally be some portions which have retained the characteristic appearances of the tinea tonsurans. When pustules do form, so far as I have seen them, they are but small, and not followed by thick scabs.

It is not very often that vesicles can be discovered in cases of tinea, although it was called herpes tonsurans by Cazenave. The microscope comes in to make the diagnosis absolute, by exhibiting the peculiar fungus and the diseased hairs.

*Treatment.*—The main indication is to get rid of the parasite, just as in scabies to destroy the acarus. A variety of substances may be used, all of which have this effect. I have tried a large number, such as corrosive sublimate either in ointment or in solution, solution of sulphurous acid, applied on lint under oiled silk, nitrate of silver either solid or in strong solution, ointment

of acetate of copper, blistering applications, and preparations of iodide of sulphur; or a mixture of one ounce of sulphur ointment, to two scruples of ammonio-chloride of mercury, as recommended by Dr. Jenner. I find none which answer so satisfactorily as the compound sulphur ointment of the Hospital for Skin Diseases:—

℞. Sulph. sublim., ℔.ss; hydrarg. ammonio-chloridi, hydrarg. sulph. cum sulph., āā ʒss. Leviga simul, dein adde olivæ olei, ʒiv; adipis recentis, ʒxvj; creasotonis ℥xx. Misce.

It must not be expected that a cure will be effected in a week or two. If the disease have made much progress it will not be cured under several months. Epilation is recommended by M. Bazin. This is stated by Dr. Jenner to be impracticable; and I have found it to be so, except at the very onset, before the hairs are much attacked, and have become brittle. You may often fancy you have pulled out a hair by the root, when, on closer examination, you will find that you have only broken it off just as it emerged from the follicle. Shaving the head is generally desirable. The internal administration of cod-liver oil and steel is of course indicated in scrofulous and tuberculous children.

Tinea tonsurans is not a very common disease. Out of 7000 cases treated by me at the Hospital for Sick Children, from September 1858 to September 1861, there were only twenty-four cases of tinea tonsurans, of which three are mentioned as having been also affected with herpes circinatus; and five cases of the latter disease uncombined with tinea.

It is probable that there were more cases in which both the scalp and the body were affected with ringworm; because frequently, where two affections coexist, the major only is indicated in the hospital books, especially when they are so nearly allied as in the present case. The numbers just given do not fairly represent the relative frequency of herpes circinatus, because this is an affection which parents themselves frequently treat by the application of ink, or leave without treatment, as it frequently gets well spontaneously.

The best treatment for herpes circinatus alone is the local use of astringents, such as a strong solution of sulphate of iron, or a drachm of nitrate of silver to the ounce of water.

*Conclusions.*—Tinea tonsurans is a disease of the scalp, dependent on the growth of a peculiar fungus—trichophyton tonsurans.

Its growth is favoured by a weakly constitution and want of cleanliness; but these are not essential to its development. It is decidedly contagious; its growth is favoured by some atmospheric conditions more than others.

The fungus of tinea tonsurans is often found in the scales of herpes circinatus; but herpes circinatus may exist without it.

Some cases of herpes circinatus appear to depend on the contagion of tinea tonsurans.

Pityriasis versicolor is another parasitic affection dependent on a fungus probably distinct from the trichophyton; but a sort of pityriasis may be caused by trichophyton, and other forms of it are non-parasitic.

In sycosis there is also a parasite; but whether it be the same as in tinea, is not established.

The fungi of tinea tonsurans and tinea favosa are quite distinct.

Two different fungi may be found on the same subject, one of them being accidental in its occurrence.

Many skin diseases not essentially parasitic may be occasionally the seats of a few sporules of fungi. Alopecia areata is probably one of this class of diseases.—*British Medical Journal*, *Nov.* 30, 1861, *p.* 577.

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## 91.—ON THE TREATMENT OF SCALDS AND BURNS.

By Dr. John Young Myrtle.

[The plan followed by Dr. Myrtle for a long time has been the use of ointments, in such a form as most effectually to exclude the air, and at the same time to cool and soothe the parts.]

In employing the ointment plan of treatment, there is certainly nothing very novel; and the combination with sulphur may be regarded as of the same nature as the use of flour or starch made into a paste, or the Carron-oil mode of treatment. But as far as my experience has gone, sulphur seems to have almost a specific virtue in cooling and soothing the irritation of the injured part, and in removing the pain and inflammation which result from the application of heat.

When called to see a case of burn or scald, if nothing has been done, I immediately cover all the injured surface with a pretty stiff ointment, composed of simple hog's lard and flowers of sulphur, spread in the form of a good thick layer on linen cloth (which is greatly to be preferred to lint, as the latter is much more apt to adhere to surfaces deprived of their cuticle, if great care is not taken to remove the dressing), which ought always to be changed as soon as the part becomes hot and uneasy, when the sulphur is frequently found in the shape of a tolerably dry paste or crust. This crust ought to be carefully removed, and fresh dressing applied immediately, to be repeated as often as necessary. Under this simple treatment burns and scalds of a slighter character heal in two or three days; and even many cases which were wont to be tedious and troublesome under plans in common use, I find to heal kindly and speedily.

For some years after the adoption of the soothing plan in this form, combined with exclusion from the action of the air, I had the mortification to find that, when the scald had been very severe, or the cutis vera had been much injured by the burn, the cure was delayed by the occurrence of ulceration or sloughing, which I treated with the usual lotions, though too often with but tardy success. A good many years ago, in the course of a conversation with my friend Dr. Stark on the treatment of burns and scalds, I acquainted him with my ointment plan, and mentioned my occasional disappointments; when he told me that he had long used another ointment, which, when applied to the injured or ulcerated parts, generally induced a healing, reparative process far more speedily than could be obtained by the washes, &c., generally employed. The ointment in question is composed of common leeks and hog's lard, in the proportion of as much hog's lard as a slice of fresh butter for the table to each leek, which, being allowed to simmer by the fire in an earthern vessel until the leeks become quite soft and tender, and being strained through muslin, on cooling forms an ointment of a lightish green colour, with a slight garlic odour. This ointment I have had many opportunities of testing, and I can confidently testify to its great value in the case of scalds where ulceration has taken place, and of burns where the cutis vera has been materially injured.

In scalds and burns of a minor character I always trust in the first instance to the sulphur ointment; but when a burn is combined with a scald, or if an ulcerated spot appears, I have the leek ointment applied to those parts without delay, and am almost never disappointed in witnessing a rapid cure with comparatively little pain to the patient. In the case of severe scalds, as soon as ulceration threatens the vesicated parts, the cuticle ought to be carefully removed with a pair of forceps and very sharp scissors, so that the leek ointment may be adopted instead of the sulphur, when an hourly improvement will probably be observed.

I have also constantly used the sulphur ointment in cases of small-pox; and, when carefully and constantly applied, it has never failed to afford relief, and has almost entirely prevented pitting; indeed, so far as I have used it, I may say that I have not had a single case of disfigurement, even in cases of natural small-pox in adults. Its use also in the painful and troublesome excoriations of children is equally effectual and soothing. As to the leek ointment, it is as well to mention that I have frequently found it very serviceable in foul indolent ulcers, and also in gangrenous bed sores, an instance of which may be mentioned in the case of a patient I attended for my friend Dr. Peddie, in which there was hopeless disease of the heart,

kidneys, &c., accompanied with general dropsy. When I saw her on the 9th of September last, I found gangrenous inflammation of both lower limbs, extending from a little below the knee to the instep in the one leg, and to within two inches of the ankle on the other, each patch being fully two inches broad. A poultice was applied for a few days until the separation was fully established, the leek ointment was extensively applied, and though the lady died before the end of the month, the sloughs had not only come away, but the sores were rapidly contracting, and were in a wonderfully healthy condition. In a more favourable case, I am confident the best result might be expected, and troublesome granulations, such as generally accompany the continued use of poultices, might be in a great measure prevented.—*Edinburgh Med. Journal*, *Jan.* 1862, *p.* 641.

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## 92.—ON THE TREATMENT OF VARICOSE ULCERS OF THE LEG WITHOUT REST.

By John K. Spender, Esq., Dudley.

[The "domette" flannel is composed of a mixture of flannel and cotton. It is superior to ordinary flannel as a material for bandages for the leg, being less heating and cumbrous to the limb. It is more elastic than the cotton bandage. Mr. Spender says:]

I am in the habit of using an ointment containing a very large quantity of an alkaline earth (such as chalk), which, when spread thickly on lint, forms a sufficient protection to the sore, and neutralises the foul acrid secretion which often flows from it. The compound lead ointment of the *Pharmacopœia* answers tolerably well. A varicose ulcer thus dressed and bandaged generally heals with extraordinary rapidity; nearly all pain ceases; and the patient may be advised to follow his usual duties or pleasures without the slightest hindrance. No medicine is required, beyond what may be necessary to correct any constitutional disturbance, or to amend any special dyscrasia.

I have found the domette flannel bandage very useful in other cases in which firm and persistent pressure is needed. The effusion which accompanies strumous synovitis of the knee-joint may be greatly controlled by this simple plan; and I may mention that it is of excellent service in promoting the cure of troublesome ulcers on the upper extremity.

Mr. Hilton has lately shown that "rest" is a most capital remedy; but there are instances in surgical practice in which "rest" is wholly unnecessary, and physiologically injurious. In the artizan and the tradesman, "rest" represents so much capital of bone and muscle lying fallow, and possibly becoming

even the worse for it. Even the man of mere pleasure does not like to lie in bed for two or three months, if he can help it. We ought, therefore, to welcome a mechanical appliance of ready and easy use in the management of varicose ulcers of the leg, which simply aids the natural processes of cure, and accomplishes our work without that "rest" which is often a tedious and costly auxiliary.—*British Med. Journal, Feb.* 1, 1862, *p.* 129.

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## 93.—ON THE TREATMENT OF INDOLENT ULCERS.

By J. Mitchell, Esq., Surgeon to the Lancaster Infirmary.

[The following is certainly a new method of treating old indolent, or callous ulcers generally, but more particularly of the leg. The healing process completes itself "in little more than half the time the ordinary treatment occupies."]

The method is very simple, and within the reach of every one. Supposing you have a case of old indolent ulcer, for example, all you have to do will be to wash the leg well; after so doing, fill up the excavated ulcer with fine powdered carbonate of iron, afterwards applying a large linen pad, without any moisture coming near; then envelope the whole limb in a starched bandage, allowing it to remain for three weeks or so, according to the extent of ulcerated surface. Another feature in this method is, that the patient need not be confined to bed, or be enjoined absolute rest, but can even walk a little every day. The limb must be kept perfectly dry. —*Lancet, Jan.* 4. 1862, *p.* 23.

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## 94.—ON THE TREATMENT OF GOITRE WITH THE BINIODIDE OF MERCURY OINTMENT.

By H. M. Greenhow, Esq., Brevet-Surgeon H.M. Indian Army, Segowlee.

[Our readers will recollect an interesting paper about four years ago, by Dr. Mouat, of Bengal, (see 'Retrospect,' vol. xxxvii., *p.* 369,) in which the treatment of goitre by biniodide of mercury was shown to be very successful in India. The present paper confirms what was then stated, and will refresh the minds of our readers on the subject.]

During the last six cold months more than 1500 people have been treated at Segowlee, and with the greatest success. Some cases required a second or even a third application of the ointment, but very few proved incurable. I may mention that I used a stronger ointment than was prescribed by Major Holmes or Captain Cunningham, for to 3ibs. of lard or fat, 12 drachms of biniodide of mercury were added. After this ointment was

smeared over the goître, the patient sat in the sun with his neck well exposed. The effect was apparent in an hour or two, for a blister rose; but in the course of a week or ten days this healed, and left the tumours, if not completely cured, at least very greatly diminished. The people willingly paid their money, and, indeed, were eager to do so; but since the hot weather set in they have nearly ceased to attend.

My friend, Dr. Coates, Civil-Surgeon of Moteeharee, has kindly given me the result of his dispensary practice during the last six cold months. It seems he had a total of 13,067 cases, of which 7677 have been cured, 3318 relieved, 768 have not benefited or have been found incurable, 937 have ceased to attend, and 367 are still under treatment. These results are very satisfactory, and prove the immense benefits to be derived from the use of the biniodide ointment. The remedy has indeed, a wide-spread reputation in these districts, and is considered a certain cure. That being so, the question arises whether it might not be introduced into western countries; into Europe and America, into the valleys of Switzerland, the hills of Derbyshire, the valleys of the Ohio and the Mississippi. There is not, it is true, in all these countries, the same powerful sun which in India help us so in the action of this remedy; but where the sun is absent, it would be well to try whether a roasting fire would not supply its place, and raise the required blister. There can be little doubt that it would do so, and if those who make the experiment would communicate the results they met with to the Medical Times and Gazette, we might have a valuable record of the experience thus gained.

I have already (Indian Annals of Medical Science, No. 12.) entered so fully into the subject of goître generally, and more especially into the disease as met with in India, that I do not propose now to discuss it; but there are one or two remarks which occur to me as worth making here:—

1. If there is no confirmation of my theory that drinking *lime-water* is the main cause of goître, at least I have met with no facts tending substantially to shake that theory. All the well-water round this station contains much lime, and two wells in the lines of my regiment have acquired such a bad reputation for causing goître, that the sowars prefer the river water for drinking purposes. About a dozen of them, who had never suffered from goître before they came into this district,—men from Delhi and the Punjaub, who had not so much as heard of goître—became affected with the disease in the last few months, but were easily cured by the biniodide treatment. The fact of these sowars, strangers in this part of the country, becoming goîtrous, shows that the cause is a local one, and goes

far to prove it to depend on the water of the district; for, except as regards the water, these men's food and drink were the same as those to which they had previously been accustomed. They all set their disease down to the water, and I think, with reason; and, as far as we know at present, the excess of lime in it is its greatest peculiarity.

I ought to say that Dr. Macnamara, the Civil-Surgeon of Tirhoot, has been conducting a series of experiments for some time past, which have for their object the elucidation of the cause of goître; and I trust he may soon have some fresh light to throw on the matter.

2nd. As regards the connexion of goître with cretinism, I have not seen any reason to change my opinion, that the two are by no means necessarily connected. Among all the goîtrous patients treated by me, no cretins (or *baods*, as they are called here) were met with; yet there are many *baods* in the country round. These persons are, doubtless, often goîtred, for they are exposed to the same causes of goître as others; but if many hundreds of goîtrous persons are brought promiscuously together, and no *baods* are found among them, that is strong *primâ facie* proof that the two diseases are not necessarily connected. Inquiries have been attempted to be instituted with a view to eliciting the causes of *baodism* here, the number of *baods*, male and female,—goîtred and ungoîtred; whose parents had or had not goîtres; who were born *baods*, &c. &c.; but no satisfactory results have been obtained. The difficulties of such an investigation are obviously very great.—*Medical Times and Gazette, Nov.* 30, 1862, *p.* 552.

## DISEASES OF THE EYE AND EAR.

### 95.—ON THE USE OF ELECTRICITY IN CERTAIN FORMS OF PARALYSIS OF THE MUSCLES OF THE EYE.

By Dr. Soelberg Wells, Clinical Assistant to Mr. Bowman at the Royal London Ophthalmic Hospital.

[The patient had been suffering some weeks from paralysis of the external rectus muscle of the left eye, which was soon accompanied by an evident inward squint of the same eye. Dr. Wells says:]

I came to the conclusion that there was paralysis of the external rectus muscle of the left eye, with secondary contraction of the internal rectus of the same eye. My reasons for this opinion were as follows:—The paralysis of the left abductor was proved by the want of mobility outwards of the left eye, by the disproportion between the movement outwards of this eye to fix an object (the right eye being covered), and the considerably greater

inward associated movement of the right eye. This disproportion can only occur in cases of paralysis, for in common squint, the secondary angle of squinting equals the primary, *i.e.*, the inward associated movement of the covered eye would correspond in extent with the outward movement of the squinting eye, whereas in our case it is not so, for the secondary angle of squinting is greater than the primary. Again, the paralysis of the abductor is proved by the phenomenon of the patient's inability to hit the object (the right eye being covered) when he strikes quickly at it with his hand. As some of my readers may not quite understand the reason of this, I will give, in explanation of it, an extract from my above-mentioned papers (*Ophthalmic Hospital Reports*, No. 9, p. 136) :—

"If we close the right eye and tell the patient to strike with his finger quickly (if he does it slowly he will have time to correct his mistake) at an object held somewhat in the left half of his field of vision, he will miss hitting it, by going too much to the left; for the insufficiently innervated abducens demands, in order to bring the eye into the required position, as strong a contraction impulse as would, in a normal state of the muscles, effect a far greater amount of movement, therefore the patient at first, over-estimating the amount of contraction, believes the object to lie more to the side of the paralysed muscle than it in reality does, and consequently aims too much to the left of it. In time, however, if the paralytic affection be not too complicated, patients learn to correct these errors. The dizziness frequently complained of by them, is not necessarily owing to any cerebral lesion, but is due generally to the confusion which arises from the difference between the real and imaginary position of the object."

The nature of the diplopia also pointed to a paralysis of the left abductor muscle. It was homonymous, showed only lateral differences (except in the diagonal position, outwards,) and the differences in the double images increased the further the object was moved to the left.

The second portion of our diagnosis—the secondary contraction of the left internal rectus muscle—was proved by the following facts :—1. By the convergent squint of the left eye, which existed not only when the patient looked at an object at eight feet distance, held in the middle line, but which extended even two and a-half feet into the right half of the field of vision. Now, if it had only been a simple, uncomplicated paralysis of the left abductor, both optic axes should already have been fixed upon the object when it was held in the middle line. 2. The diplopia, which did not cease at the middle line, but corresponding to the squint, extended two and a-half feet into the right half of the field of vision.

Let us now consider the cause of the affection. This appeared to be peripheral, *i.e.*, not dependent upon causes within the cranium, for there was no impairment of the mind, or of the sense; his memory was good, and there was no other impairment of mobility in any portion of the body. And in the total absence of any symptoms of pressure, &c., upon the sixth nerve, within the orbit, I presumed that the paralysis was most likely due to rheumatism; this being a very frequent cause of these affections, more especially during cold and wet weather, and I therefore gave a favourable prognosis, more especially as the paralysis was not of long standing. I, however, warned the patient that although the paralytic affection might be cured, some secondary contraction of the opponent and consequent convergent squint might remain, and demand an operation.

*Treatment.*—As the affection had gradually progressed even under the skilful treatment of his medical attendant, I naturally looked about me for some other plan of treatment, in the hope that this might prove more successful. As I had seen electricity very much employed in Von Graefe's clinique in paralysis of the muscles of the eye, dependent upon peripheral causes, and had seen many admirable results from its regular and prolonged employment, I determined to try its effect in this case, and am happy to say that it rapidly effected a cure. The iodide of potassium was continued till June 13, but I do not think that the favourable turn the disease assumed was due to the action of this remedy which had before the application of electricity proved unavailing even to arrest the affection. In order to free the patient from the annoyance of the diplopia, I directed the left eye to be covered, the prisms required to unite the double images being too strong and clumsy to wear—(16° for reading, 32° for distance.)

June 30. I saw him again—he is greatly improved, the inward squint is reduced to about a-quarter of a line, and corresponding to this the diplopia extends only five inches (instead of two and a-half feet) into the right half of the field of vision.

August 2. Met him in the street, not the slightest inward squint, except on looking far to the left, is not at all annoyed by diplopia except in the same direction, but can follow his professional duties, read, write, &c., without any inconvenience. Left off electricity July 15.

September 3. The mobility outwards of left eye almost normal. No convergent squint until the object (held at eight feet distance) is moved four feet into the left half of the field of vision when diplopia arises. I wished him to resume the electricity in order that the affection might be completely cured, but he had no opportunity of doing so, and I therefore ordered him to practise the left abductor by means of a prism of 5° with its base turned inwards.

November 12. The mobility outwards has increased a little more, the outer edge of the cornea can be almost brought to the outer canthus. The convergent squint and diplopia now only arise when the object (still at eight feet distance) is brought five and a-half feet into the left half of the field of vision. The patient considers himself perfectly cured.

The electricity was at first applied for five minutes daily, by Mr. Crosse, and this time was gradually extended to twenty minutes. One electrode, covered with moistened sponge, was applied to the skin of the closed eye exactly over the paralysed muscle, the other electrode was placed on the temple. One of the rotating magneto-electric induction machines was used.

Electricity certainly answered better in this case than I expected, for not only was the paralysis of the external rectus all but cured, but as this muscle increased in strength, the secondary contraction of the internal rectus was gradually overcome and the squint disappeared. Had the electricity been continued but a few weeks longer, I firmly believe that the paralysis would have been *completely* cured, the patient, however, felt no annoyance from the slightly remaining paralysis, and therefore really did not care much about resuming the treatment. I may be met by the opinion that the iodide of potassium, and not the electricity, produced the benefit, but how is it then that under its use the patient got no better? as soon, however, as electricity was applied, the improvement commenced and gradually and steadily continued.

Electricity is indicated in paralytic affections of the muscles of the eye dependent upon peripheral causes, its action is especially marked in cases produced by rheumatism.

In conclusion, I must warn the reader against ever using the *continuous* current in applying electricity to the eye, on account of its deleterious effect upon the retina; we should therefore always employ the extra current of an induction machine, using either a magneto-electric or volta-electric apparatus: each has its advantages, for a full consideration of which I must refer the reader to books on electricity, more particularly to Dr. Althaus's excellent work on Medical Electricity.—*Med. Times and Gazette, Dec.* 28, 1861, *p.* 660.

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## 96.—ON THE INSUFFLATION OF CALOMEL IN CERTAIN DISEASES OF THE EYE.

By Dr. Soelberg Wells.

[The insufflation of calomel in certain ophthalmiæ, particularly in specks of the cornea, was in frequent use many years ago, but has fallen into disuse. It has, however, been lately advocated by Von Graefe.]

Its use is particularly indicated in the following affections:—

1. *In the different forms of phlyctenular or pustular* (or what is often designated scrofulous) *ophthalmia.* It is not only of very marked advantage during the presence of the disease itself, but it is also of the greatest use in preventing the constant recurrence of this affection, which forms such a source of discomfort and annoyance to the patient. I think it, therefore, of consequence that the insufflation should be persisted in, at the interval of one or several days, according to the requirements of the case, even for some time after the disease itself appears cured; when its use is definitely abstained from, strict injunctions should be given to the patient to have the remedy at once re-applied, as soon as any symptoms of recurrence shew themselves. Although it should generally only be used when there is hardly any inflammatory irritation, I have often employed it with the greatest advantage in these cases of pustular ophthalmia, when there was considerable vascularity and some lacrymation. In such a case, however, we should see the patient every day, for fear that too much reaction might be set up. If this cannot be done it is better to abstain from its use until the amount of irritation has decreased. The insufflation of calomel is contra-indicated when there is great irritation, vascularity, photophobia, with very copious lacrymation: or if there are pustules or abscesses of the cornea.

2. *In the pannus due to phlyctenular corneitis.*—But if this form of pannus is accompanied by corneitis fasciculosa (frequently called scrofulous corneitis; the distinctive marks of the disease being an elevated infiltration, which is pushed forward towards the centre of the cornea at the extremity of a bundle or leash of vessels,) calomel should not be used as there is too much irritation, and red precipitate ointment should be employed. The indication for the use of the latter is, the presence of vascularity of the cornea, with no tendency to a general detritus (necrosis) of the corneal tissue.

3. *In the regressive stage of this fascicular or scrofulous corneitis* (when the infiltrations have disappeared) calomel is indicated, in order to prevent a relapse.

4. *In phlyctenular corneitis* (sometimes called herpes cornea, also described as ophthalmia scarlatinosa, morbillosa, &c., as it is frequently met with during the period of desiccation in scarlatina, measles, &c). At a later stage of this affection, when the severe inflammatory irritation, with its increase of temperature, arterial hyperæmia, lacrymation, &c., has passed away, calomel often acts as a specific, almost as a charm.

5. *In various forms of opacity of the cornea*, more particularly if they are not too dense, or of too long standing, and if there is still some slight irritability of the eye, and where we fear a

recurrence of the original affection. The great advantage of calomel in such cases is, that we can thoroughly regulate and control the degree of its action, which is also not too irritant.

The calomel to be used for insufflation should be very finely powdered and perfectly dry, so that it does not form clots on the conjunctiva or cornea, which are apt to act as mechanical irritants. It should be applied with a fine camel's-hair paint brush, held between the thumb and forefinger, a slight fillip with the middle finger against the handle of the brush will jerk some of the powder into the eye. It should be applied every day, or every other day, according to the requirements of the case; if after its application the eyelids are much gummed together in the evening it should be employed less frequently. In children it is often exceedingly difficult to get anything into the eye, on account of their restlessness, or the intense spasm of the eyelids. In such cases it is best to place the head of the child between the knees of the surgeon, so as to fix it thoroughly, its legs and hands being held by an assistant, who sits on another chair opposite, the eyelids are then easily opened by the elevators, and the eye may be thoroughly examined, and the application, whatever it be, efficiently applied. Simple as this hint is, it is yet of importance, as all will admit, who have witnessed the, but too often, vain endeavour to gain a glimpse at the cornea or to apply some lotion, &c., in some of these cases.—*Ophthalmic Hospital Reports, Jan.* 1862, *p.* 314.

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## 97.—ON THE USE OF FORCEPS IN EXTRACTION OF CATARACT.

By John F. France, Esq., Surgeon to the Eye Infirmary, Guy's Hospital.

[The importance of fixing the eye effectually can hardly be exaggerated; for from the spasmodic movements of the organ mainly arise the accidents to which this operation is obnoxious. For the purpose of holding the eye fixed nothing is better than a pair of ordinary artery forceps.]

A pair of toothed artery forceps should be selected for this purpose, the dentations of which close at the extreme point of the nibs; as, if the latter are rounded off, so that their teeth do not project and bite at the very point, the forceps is likely to take hold only of the loose conjunctiva. The patient (being recumbent), is first desired to look upwards, while the operator at his head depresses the lower lid. The open nibs of the forceps are then applied upon the exposed globe beneath the cornea, and made by slight pressure to scrape along the surface as they close; in order to seize, together with a fold of

conjunctiva, the tissues beneath (including, if possible, a few fibres of the inferior rectus tendon), and convert the forceps into a firm handle to the eye. The instrument is now delivered to an assistant, resting his hand upon the cheek; while the operator proceeds to raise the upper lid, and apply his fore and middle fingers above and on the nasal side of the globe in the usual manner, thus consummating his command of it.

Should any inconvenient reflection from the surface of the eye, the natural conformation of the parts, or other circumstance, render an alteration in the exact position of the cornea desirable, this can now be effected at pleasure by a word to the assistant, who can gently draw it into, and (the surgeon's fingers co-operating) retain it steadily in, the precise position that is required. Meanwhile the attachment of the forceps serves simultaneously to keep the lower lid depressed, and enables the contact of additional fingers to be dispensed with. All things being thus prepared, the knife can be deliberately inserted, carried in a uniform, undeviating course across the anterior chamber, and be brought out accurately at the nasal margin of the cornea. No irregular movements of the globe delay commencement of the section; no spasmodic inversion, without previous warning, obscures its progress, and invests its completion with sudden difficulty and danger. But the cornea remains stationary and central, alike while the cutting instrument pierces its temporal margin, while it divides the texture continuously, and when again it emerges at the nasal edge.

As soon as the cornea is fairly transfixed by counter-puncture, and a narrow isthmus alone remains for division, the knife itself holds the eye still, the iris lies safely behind the instrument, and the forceps must be detached at the same moment that the pressure of the fingers is withdrawn. The section is then completed, and the operation from this stage (which is, indeed, the turning point of the whole) proceeds in the ordinary manner.—*Guy's Hosp. Reports*, *Vol.* vi., 1860, *p.* 78.

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## 98.—ON PARACENTESIS OF THE CORNEA.

By George Lawson, Esq., Surgeon to the Great Northern Hospital; Clinical Assistant to Mr. Bowman.

[There is often considerable advantage if not an absolute necessity in tapping the anterior chamber of the eye, in cases of sloughing ulcers of the cornea, or of ulcers which refuse to heal under other modes of treatment.]

The operation is a simple one, and best performed by the manner usually adopted by the surgeons at Moorfields, viz., by passing a broad needle through the cornea at its lower

margin, keeping the point well forward towards the cornea, to avoid wounding the lens, and then suddenly turning it on its edge so as to allow the aqueous to run off, and rapidly withdrawing it, as soon as the iris approaches the cornea.

The indications which call for this line of treatment may be briefly stated.

1st. Increased tension of the globe. The eye, in any of the above-mentioned cases, may have its tension slightly increased, and this seems, in a great measure, to depend on an increased secretion of the aqueous, for the anterior chamber becomes deepened; and this is specially observable when contrasted with that of the other eye, and the iris, instead of presenting a plane surface, slopes backwards.

2nd. Deep ulcers which threaten to perforate the cornea will often rapidly assume a healthy action after the tension of the cornea has been diminished by letting off the aqueous humour; and sloughing ulcers will, under the same treatment, derive similar benefit.

That this benefit is often only transitory is true, but the operation is so simple, that it may be repeated an indefinite number of times, if the patient after each derives relief.

3rd. In cases of onyx or pus between the laminæ of the cornea, the relief of the tense state of the cornea promotes absorption, and relieves pain, and so places the eye in a favourable condition for complete recovery. An onyx which threatens to burst backwards, can be most safely combated by tapping the anterior chamber of the eye in addition to the use of other remedies.

4th. This operation relieves pain, and, if carefully and properly performed, can do no harm. The relief of pain is so remarkable, that patients, on their next visit to the hospital, will, unasked for, relate the great benefit they derived from what had been done to the eye; but at the same time they will often state that after about twenty-four hours the pain was nearly as bad as ever. The truth being that the aqueous had become completely restored, and that the tension which called for the first tapping was as great as ever.—*Ophthalmic Hospital Reports, Jan.* 1862, *p.* 317.

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## 99.—ON THE ADVANTAGES OF HAVING SOME EYE-INSTRUMENTS GILDED, WITH A NOTE ON NON-METALLIC INSTRUMENTS.

By J. F. Streatfeild, Esq., Surgeon to the Royal London Ophthalmic Hospital.

Occasionally we may see an instrument used in ophthalmic surgery that has been gilt, but this distinction seems to have been without any other purpose than that of ornament. No

one eye instrument, that I know of, is *always* gilt, nor is any one *class* of instruments commonly thus distinguished, but there are practical advantages in having a gold surface, to some of them at least, that I have learnt not to neglect. The first instrument I have had gilt was my spatula-hook, for in the operation of corelysis, when the instrument, passed behind the pupil, is in apposition with the lens, it is not easy to tell, and it is so much the more important to know the exact position of the instrument and the direction it is made to take. I found, as I expected, that in using this instrument it enabled me to see better what I did in all that I had to perform. Then I had an iris-hook gilt, and, for the operation in which it was employed, I again found the advantage of the yellow metal, and now I intend to have the cannula-forceps and scissors and other iris instruments coated in the same manner. I am inclined to think that at least all instruments used for operating on parts within the eye should be gilt—the cutting instruments may be an exception—but of those that can be gilt the lighter colour will make them much to be preferred to the dark polished surface of steel. In an operation, there are two reasons why a steel instrument is not easily seen in the eye—it is so dark that, in the anterior chamber, it probably does not contrast well with the colour of the iris, and it has so smooth a polish that, in the deeper parts of the eye, it does not generally reflect enough light. In the aqueous chambers its highly polished surface reflects the light very strongly from some one part or another of the instrument (it is not always easy to tell whence it comes), or the instrument cannot be well seen because the light is hardly at all reflected from it. A surface of gold is perfect with a much less degree of polish, for it will not rust, which is another especial advantage for eye instruments, because of the tears and other watery fluids with which they are brought into contact; for this reason, eye instruments generally, being so small, would be kept in better order if they were gilt. Steel, even with care, will rust if there is any want of smoothness on its surface. Dull gold, on an instrument of polished steel, will show light whichever way the instrument is held.

I do not know why any small blunt instruments which we employ should be always of steel or any other metal, and therefore, wishing to have a spatula-hook to be as conspicuous as possible in contrast with the iris and its brown adhesions, I have had one made of ivory, and although it is so very small it is tough, and very little strength is required in it, as, for other reasons, no force may be used in the detachment of iris adhesions. In corelysis lately, I have employed this instrument, and have found it practically answer my purpose better than any other that I have of metal.—*Ophthalmic Hospital Reports*, *Jan.* 1862, *p.* 342.

## 100.—ON THE USE OF ATROPINE-PAPER.

By J. F. Streatfeild, Esq., Surgeon to the Royal London Ophthalmic Hospital.

At the present time, when atropine is so much used for ophthalmoscopic purposes, as well as for the treatment of iritic and other cases, I hope the mode of employing it, which I beg to introduce to the notice of oculists, for their convenience, is very opportune. It is simply a coloured tissue paper imbued with a solution of the sulphate of atropine, of such strength that a small square piece of it, of a certain size, is equal to or contains as much of the salt as a drop or minim of the solution of a strength in ordinary use. The paper, soaked in the strong solution, is hung up to dry, and turned about while drying, that the atropine may be equally distributed. The little piece of the paper to be used, one-fifth of an inch square, is taken up on the tip of the fore-finger, previously damped, and the patient's lower lid being drawn down, he is told to look upwards and the scrap of paper is put on the sclerotic conjunctiva below the cornea almost without the knowledge of the patient; the lid is then let go, and the piece of paper is left between the ocular and palpebral conjunctivæ; a handkerchief is then tied over the eye that the lids may be kept closed for a while.

The atropine thus used, has I find, acted at least as well as the drops of the solutions that are commonly employed. I think, as is likely, it has acted more powerfully than the drop of any equivalent solution, of which so small a quantity really remains under the eyelids when they are closed after its instillation. The tissue-paper becomes at once wet and soft with tears, lies flat on the eye-ball and creates no more conjunctival redness or lacrymation than the drop of solution.

At first, when the present plan suggested itself to me, I used white paper, but this, soaked in tears, becomes transparent, and is hardly distinguished from the conjunctiva; since then I have adopted green paper, for red might not be plainly seen in any case of external redness of the eye, and strips of blue or yellow paper might be mistaken for litmus or turmeric paper. The green paper is always easily recognised: it contains neither copper nor arsenic. In a quarter of an hour, or whenever the mydriatic effect is produced, the scrap of paper is easily removed with the tip of the forefinger from under the lower lid, which is depressed for the purpose; if the little piece has got under the upper lid, it will be floated down by shutting and opening the eye a few times and may be wiped out, as before, without any difficulty.

The sole object I had in view, when this paper was first prepared for me was, as I have said, the convenience of those who, like myself, have constantly to be provided with atropine for use. I have carried about a small bottle of the solution in my pocket, and sometimes I had left it at home when I wanted it, but now I have always in my pocket-book some of the paper ready for use, almost without weight, occupying hardly any space, and making no separate item to be remembered. A glass bottle may be protected from breaking, or escape of the fluid, but all bottles are cumbersome, and the many different kinds of atropine drop-bottles, almost every oculist having his own pattern, prove that there was no very convenient method of carrying the agent, which in practice we most require; the paper will, I believe, be found not only convenient in this way but very efficacious. Its portability is perhaps the great advantage of the atropine paper, but, recollecting the small quantity of any solution dropped into the eye that is probably retained when the lids are closed, and its further dilution by the flow of tears generally produced, I think the atropine paper may be proved to be very powerful in those cases in which the *greatest* mydriatic effect is desirable; for the whole of the dose used is first placed within the lids, and lacrymation at all does not usually follow the use of the atropine paper, therefore I have been using it in cases of old synechiæ before operating for their detachment. The salt in the meshes of the paper is dissolved out gradually, and with very little, if any, increase of tears, is mixed with them to spread itself over the surface of the conjunctiva. Having thus explained the mode of its operation, I intend to try if the same paper vehicle will not be advantageous in the use of other drops and lotions for the eye. Perhaps a strip of paper, soaked in a strong solution of sulphate of copper, cut of the size of the cartilage of the upper lid and laid upon its under surface when the conjunctiva is "granular," will not improbably act more efficiently than the drop of solution of the same salt, and less painfully than when it is applied in the solid form, the greater effect being attainable by the *real* use of as much of the salt as is contained in an ordinary drop of the solution used, and the pain being, I suppose, mitigated by a *gradual* application of the sulphate of copper instead of its being used at once in the solid form; but this remains to be proved.

The small space the atropine paper will occupy in the pocket is not the only convenience to be found in its use. It does not alarm timid patients as a bottle of drops (believed to be "caustic") and a quill, brush, or glass tube brought up

to the eye does: children are often then quite intractable, and, if they cry, the atropine solution is often too much diluted to be of any use. The atropine paper, it will be observed, can never become a common mode of employing the agent by the patients themselves, for very few of them or their friends could be trusted to put the paper properly into the eye, or safely to wipe it out again. The atropine paper is, again I state, only brought forward by me for the use of the surgeon himself, chiefly for convenience, and also for greater efficiency in some cases in which the greatest effect is desirable.

The atropine paper, as I have described it, is prepared by Mr. Squire, chemist to Her Majesty, 277, Oxford-street, London,—he will, as I have requested him, send any one who will try the new vehicle, a specimen, by the post. The paper has been dipped in a solution so strong that a piece of it, one-fifth of an inch square, contains as much of the salt as a drop of the solution of two grains to an ounce of water. It is made up in little books with stiff covers, each page is an inch square, with black lines dividing it into fifths both ways: thus each page contains twenty-five doses. All the pages are cut through, in the horizontal lines, from the front edges almost to the back, so that the quantity required each time can be easily cut (or torn) off, in the vertical lines, from either of the horizontal strips into which the paper are divided.—*Ophthalmic Hospital Reports, Jan.* 1862, *p.* 310.

# MIDWIFERY,

## AND THE DISEASES OF WOMEN, ETC.

### 101.—ON DYSMENORRHŒA AND STERILITY.

By Dr. John Coghlan, Wexford.

[Some time since, Dr. Coghlan, in an article published in one of the journals, expressed his belief in the mechanical theory of dysmenorrhœa. A further experience and careful attention to the subject have convinced him of the correctness of this opinion. In the more severe forms of the disease we find a permanent narrowing of the canal, such as to prevent our passing a bougie, even of the smallest size into the cavity of the uterus without considerable difficulty.]

I had a severe case of dysmenorrhœa about three weeks ago, for the relief of which I had intended incising the canal, but on examination, finding it easily dilatable, I rolled up one of my thin leaden tubes very small, passed it well into the canal by means of the instrument hereafter described, and dilated it to some extent. In two days after, though a week before the proper time, menstruation came on, and the period passed over with very little pain. I did not see her for some days after she was well, and found, on examination, that the tube had, without her knowledge, fallen out, but her comparative freedom from pain is, I think, presumptive proof that it had remained in during the period.

In a recent number of the 'Medical Times and Gazette' I read an admirable lecture bearing on this subject, delivered by Mr. T. Spencer Wells at the Samaritan Free Hospital, and am happy to think that obstruction at the os and cervix uteri is being properly appreciated as a cause of dysmenorrhœa and sterility. Now, with regard to the relieving of these cases by operation, I think that when we find a tight, unyielding constriction, the proper proceeding is to incise the os and cervix uteri by means of the probe-pointed knife described in my paper June last, and the reason I particularize this knife is that I believe that by no other means can we in those cases requiring it, perform the operation so perfectly, safely, and expeditiously, and with so little pain to our patient. In the first place, with ordi-

nary care we are sure to divide the os internum; secondly, we must, with or without the speculum, go in the right direction, and the incision is made at once equally on both sides, and with but little pain. Now, suppose in lieu of it that we decide on using the sheathed bistoury. In most of these cases we can, with difficulty, introduce a No. 1 bougie, and consequently we cannot introduce the sheath of even a single blade strong enough to cut the dense structure with which we have to deal; but, supposing that we could introduce it, in withdrawing it we cut but at one side; we then, should it have a regulating screw, double the projecting power of the blade, reintroduce it, and use the wound just made as a support for the sheath whilst we incise the opposite side. The unfixed state of the uterus and the density of the parts would necessitate all these proceedings if the surgeon wished to have both sides incised equally. Suppose we use a probe-pointed bistoury, it would require the exercise of both skill and care to use it safely for our patient, and would necessitate the use of the speculum. These are the reasons why I prefer the probe-pointed knife to any other instrument. The knife I at present use is not so full where it springs from the probe-point as that which I described in my paper, and has a rather deep circular groove at one inch and three-quarters from the point, for the purpose of serving as a guide to the finger, or to the eye when the speculum is used, as to the depth to which the knife has penetrated. By having it marked so far from the point, we can easily judge of the proper distance to introduce it, both in the healthy state of the organ and in those cases in which we find it hypertrophied.

In manufacturing the instrument, the stem was left soft, so that it can be bent to suit the varying obliquity of the uterus, at the same time that it is sufficiently stout for the purpose intended. Before using the knife, I introduce a small bougie in order to be certain that the canal is permeable by its probe point. Now, with regard to the result of our incision, judging from analogy, I would certainly say, that unless cicatrisation was completed over a metallic plug, that the contraction would become as great as ever. In the cervix uteri we have the cut surfaces kept in contact both by the natural shape of the part and by the muscular fibres which surround it; and, interrupt the process as we may by the occasional introduction of the finger, I am inclined to think that some amount of adhesion would take place, which, assisted afterwards by a contracting cicatrix, would, in the course of time, leave our patient in about the same state as before the operation. I do not for one moment doubt that pregnancy and other advantages have followed the operation at the hands of the distinguished and talented surgeons who practise it; but I am much inclined to

think that these advantages have occurred before cicatrisation and the succeeding contraction were complete. With the object of making the operation of incising the os and cervix uteri permanently valuable, I recommended, in my former paper, that a coiled-up tube of thin sheet lead should be introduced immediately after the incision, and dilated by means of a long, slight dressing forceps; but, having sometimes found this process not easy of execution, I devised a rather simple instrument, by means of which I never fail in easily introducing, dilating, and leaving in the canal, the leaden tube, which I believe to be absolutely necessary to the ultimate success of our operation. This instrument consists of two blades, forming when closed a slender conical beak one inch and a-half long, terminating in two long handles with a spring and regulating screw. The following woodcut is one-third the size of the instrument.

Dr. Coghlan's Dilator.

When about to use the dilator, we must fully separate the handles and secure them so by means of the screw; then take a piece of sheet lead rolled out to about the substance of a thin visiting card, from an inch and a-quarter to an inch and a-half long. Wrap it tightly round the beak of the instrument and cut off the superfluous parts, leaving it of sufficient width to form a tube of the size we require. Having perfected our incision of the os and cervix, we introduce the beak of the dilator up to the shoulder which supports the leaden tube, we then uncrew the nut to the extent we wish to dilate the tube and press the handles together, by that means the blades of the beak are divaricated and the tube dilated. We then take off the pressure from the handles, the spring closes the beak, which should then be gently disengaged, leaving the tube in the canal. The shoulder of the instrument, in addition to being wide enough to allow of the tube being spread out a little at the lower part, should be rather near the joint, in order by increasing the divergence of the points to keep the leaden plug more securely in its place. As, if too distant, the blades being conical would leave the sides of the tube nearly parallel.

In those cases of dysmenorrhea and sterility in which we have reason to suppose that obstruction exists, but where we find the os and cervix dilatable, I think that our proper proceeding is to introduce the leaden tube at once by means of the dilator without incising the parts: I have yet had little experience of

this proceeding, but think that it will be found valuable. In the dysmenorrhœal case which I have before mentioned, whether it was that the patency of the canal was preserved for the time, or that the nervous irritability of the organ was diminished by the presence of the foreign body, the comparative freedom from pain was quite remarkable.—*Medical Times and Gazette, Feb.* 22, 1862, *p.* 185.

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102.—*Veratrine in Painful Menstruation.*—The severe pains sometimes attendant upon the expulsion of the menstrual coagula may often be relieved by large doses of castor: and M. Vannaire strongly recommends in this mechanical form of dysmenorrhœa, an ointment containing one-hundredth part of its weight of veratrine, from fifteen to thirty grains of which are lightly rubbed into the hypogastric region twice a-day. Four or five applications have always sufficed.—*Revue Méd., and Med. Times and Gazette, Dec.* 7, 1861, *p.* 585.

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## 103.—RETAINED MENSES OF TWO YEARS' DURATION, CAUSED BY ATRESIA VAGINÆ, AND TREATED BY PUNCTURE OF THE UTERUS PER RECTUM.

By I. Baker Brown, Esq., London.

[The patient was 15 years of age, single. The symptoms were great pain at every monthly period, without any show of menses. Latterly the pain had been constant and excruciating. The uterus externally felt the size of a four months' gravid organ, and it could be felt bulging on the rectum.]

Nov. 21st Mr. Brown introduced a curved trocar into the uterus per rectum, and fastened the canula in by tapes. At the time of the operation a good deal of treacly-looking matter escaped through the canula, and continued to do so for two or three days after. On the 24th, she had some pain, followed by a discharge of healthy and fresh menstrual fluid through the canula. On the 27th, the bowels were opened, the canula being still in. The canula was kept in for a fortnight, the bowels acting regularly every day. On the 2nd of January, after two or three days' suffering of uterine pain, she again menstruated per rectum, and shortly afterwards returned home quite well.

Dr. Routh, after thanking Mr. Brown for his contribution, remarked that the case was satisfactory as one of recovery after liberating a menstrual accumulation per rectum. It was important because usually, when an opening for the same purpose was made per vaginam, death was the result. How far, therefore, did recovery depend upon the rectal opening? It was well known we occasionally met with large ovarian cysts within the

pelvis, which gave rise to so much distress and pain that the liberation of the contained fluid became imperative. Now he believed five such cases had occurred in the Samaritan Hospital, all of which, except one, had died after the operation. The continual drain kept up of purulent matter, which usually became very offensive, exhausted the patient in the end, although the immediate effect was relief. Did this depend on the passage of air within the cavity? It was known as a practical point, already insisted upon by Dr. Oldham, for reducing retroverted wombs, that if the vagina was opened and pulled backwards a rush of air took place, and the vagina was pulled out, and so the reduction effected. Did not something like this occur in those cases where the opening was made by the vagina, which was prevented by the sphincter ani from taking place when the opening was made per rectum? *A priori*, we should expect the reverse, from the probable passage of flatus through the opening made per rectum into the cyst or uterus. It was known how intensely putrid were the contents of abscesses near the rectum, from the passage of fæcal matters or flatus within them; yet recovery was not uncommon when the opening was made per rectum. Did anything depend on the vaginal opening, when made, remaining unclosed? Altogether he thought it an important surgical point to determine, which he hoped on some future day to take up and embody in a paper for the Society.

Mr. Spencer Wells agreed with Dr. Routh, as to the necessity for inquiry into the relative safety of tapping by the vagina or by the rectum in cases where ovarian cysts were adherent within the pelvis. He had tapped by the vagina in three patients in the Samaritan Hospital. In the first case the operation was performed more than two years ago; and although the woman could not be said to be entirely cured, as some discharge still went on, yet she was in so good a state of health as to be able to walk two or three miles. In a second case, the woman died a few months after the tapping, exhausted by continuous discharge. In the third instance, the patient gained great temporary relief, but the sac was filling again. In cases where he had tapped by the rectum, he had not seen the same suppurative inflammation of the lining membrane of the cyst as after tapping by the vagina; but he had seen troublesome dysenteric tenesmus from the constant discharge of ovarian fluid into the rectum. He could not believe that it was better to have the fetid gases formed in the intestines entering an ovarian cyst than the pure atmospheric air; and he had seen cases where ovarian cysts had opened spontaneously into the rectum, or into some other part of the intestinal canal, prove rapidly fatal after putrefactive fermentation of the ovarian fluid. It was a very important practical question, which required further observation.—*Lancet*, *Feb.* 18, 1862, *p.* 175.

104.—*Living Spermatozoa in the Vagina Eight Days and a Half after Intercourse.*—In the American Medical Times, for March 9th, Dr. S. R. Percy reports a case in which, eight days and a half after the last sexual connection he found semen issuing from the os uteri. A microscopical examination revealed "living spermatozoa, and many dead ones." During this time the husband of the patient had been from home. Of the honour and veracity of the patient, Dr. Percy says: "I would stake my reputation on her honour." Dr. Percy thinks this fact may have a medico-legal bearing, and will necessarily widen the margin to the ordinary term of pregnancy, granted to exceptional cases.—*British Medical Journal, Dec.* 7, 1861, *p.* 605.

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105.—*Use of Oxalate of Cerium in the Vomiting of Pregnancy.* By Albert Lloyd, Esq., Bermondsey.—[The following case related by Mr. Lloyd, is of some interest.]

Mrs. J., aged 26, the mother of one child, of very anæmic appearance, has been out of health for the last fourteen months, during which time she has miscarried twice; on the last occasion had much hemorrhage. On October 22nd she applied for medical treatment. When I visited her I found her suffering from pain in and about the right ovary; but her pulse did not seem to indicate that it was of an inflammatory character, neither was the pain much increased on pressure over the affected part. The next day, however, a most marked change had taken place, as could be seen at once in her face. Pulse 160, thready; great pain over the right iliac and hypogastric regions, which became intense on pressure, with other symptoms of peritonitis. Her case was rendered the more distressing by her continuous retching. Everything taken into the stomach, however small in quantity, was instantly rejected; the effervescing mixture with prussic acid, ice with the fluids given, increased rather than checked it. I thought I would try the effect of oxalate of cerium, so highly esteemed by Dr. Simpson, of Edinburgh, for the sickness of pregnancy. I ordered her three-grain doses every two hours, to be placed on the tongue dry, with a small piece of ice to assist in swallowing each powder. All vomiting ceased after the second or third dose, and she was now able to retain the brandy and eggs, which were before rejected. All irritability of stomach having subsided, I ordered her twenty minims of Battley's sedative solution every three hours, and after being under its influence thirty-six hours, she rapidly recovered, and was up in a fortnight.

I send this case more in reference to the oxalate of cerium here exhibited. I read in your last impression an inquiry as to

the success of this remedy in the sickness of pregnancy. I know it to have been very useful in several cases; dose, three grains every three hours. In two cases, however, it failed.—*Lancet. Nov.* 30, 1861, *p.* 538.

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106.—*Use of Pepsine in the Vomiting of Pregnancy.* By Geo. Selwyn Morris, Esq., Guisbro'.—[Speaking of the oxalate of cerium this writer says :]

I have used it (oxalate of cerium) in six cases lately, where sickness and retching were most urgent in pregnancy. I cannot say that I am at all satisfied with the results. It is true three of the cases were relieved by it; but in order effectually to stay the urgent vomiting, I was obliged to have recourse to my favourite drug (pepsine), in ten-grain doses. I gave the oxalate of cerium in tragacanth powder, two to three grains for a dose three times a-day.—*Lancet, Nov.* 30, 1861, *p.* 538.

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## 107.—RETROVERSION OF THE GRAVID UTERUS: THE BEST POSITION DURING ITS REDUCTION.

By Dr. Thomas Skinner, Liverpool.

[During the year 1860, Dr. Skinner published some papers on this subject. (See 'Retrospect,' vol. xliii., p. 278.) Objections have been made to the position of the patient recommended by Dr. Skinner, and also to the introduction of the hand into the rectum instead of into the vagina. The present paper is an answer to these objections. He says :]

The position which I have put forth, and which I still maintain is the best, is "the patient upon her left side, the pelvis well raised, the shoulders low, and the thighs as much flexed upon the abdomen as possible." It is objected to this position that it ignores the aid of gravitation; but I cannot see how it does so. I think that the position sufficiently favours gravitation; and that in the great majority of cases it will be found quite enough so for all practical purposes.

It has been recommended in preference, that the patient should be placed with the lower extremities in bed, the pelvis over the side of the bed, and the elbows and hands on the floor; and the observation has been made that this position can be maintained for a considerable period. I cannot agree in this opinion, as in Mr. Wall's and many other cases where this position was tried, the taxis had to be stopped and renewed at intervals, the position being found to be both irksome and tiresome. This position is further open to the following objections, namely, that of raising unnecessary

fears on the part of the patient; of being most repulsive to the natural modesty of even the most callous of the sex, and the fact, that the reduction has been and can be easily accomplished without it; besides to invert a female in the puerperal condition should never be done if it can be avoided, as it determines the blood to the head and chest, harasses the breathing, and entirely prevents the aid of anæsthetics.

With regard to the statistics of the point at issue, I may state that I have collected all the facts on record connected with seventy cases of retroversion of the gravid uterus; of these, nine were placed with the lower extremities in bed, and upper extremities on the floor. In five of them, the taxis was successful, while in four, it entirely failed; of the four failures, three died. In the remaining sixty-one cases, although the position assumed is not positively stated in all of them, yet there are sufficient facts to lead me to infer that they were not inverted. They were placed chiefly upon the left side, upon the back, and a few of them on "all-fours." In the great majority of these sixty-one cases, the taxis (chiefly on the left side or back) was successful; and in a few of them, catheterism alone, without the taxis, was sufficient to reduce the displacement. In fourteen cases, the patients died. Add to these statistical facts, that I have myself repeatedly reduced the retroverted gravid uterus with ease; and that I have never employed any other position but the one I have recommended (except once in a difficult case, where I placed the patient on her back); and I think that we have sufficience of guarantee, not only of the success attending the practice; but of evidence that the profession hitherto have not generally adopted the practice of inverting the patient; nor do I think that they are likely to do so even now, except under the pressure of circumstances, or as a *dernier ressort*.

It has been argued, that inverting the patient is best, because the uterus is pear-shaped. Let me remind those who think so, that the uterus begins to lose this form about the third month; that between this term and the fifth month (the most prevalent period for the occurrence or the detection of retroversion), it gradually becomes spherical; after which, and up to the full term of gestation it again becomes pyriform.

Lastly, objections have been made to the hand being slowly introduced into the rectum (as a last resource, and when all other means have failed, puncture of the bladder or uterus being excepted), and there seems to be some doubt entertained as to the possibility of doing so. There need be no doubt, as the operation has already been done by several of the most distinguished members of the profession, and with comparative success; as for instance, in Mr. Weir's case, when all the

most approved methods had been attempted in vain. The operation, or a somewhat similar one, is performed very frequently for *fissura ani;* I have seen Professor Simpson do so; and I have repeated the operation myself with the greatest ease. It is not nearly so difficult an operation as *à priori* we might be led to suppose, especially when we resort to the use of certain adjuvants I have alluded to in my essay, namely, steaming, the warm bath, inunction, venesection, tartar emetic, opium, and more particularly the use of chloroform.

As the rule in ordinary cases, I have recommended the first *two fingers* of the right hand *per rectum.—British Med. Journal, Jan.* 4, 1862, *p.* 7.

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## 108.—ON A NEW MODE OF ADMINISTERING CHLOROFORM.

By Dr. J. Y. Simpson, Edinburgh.

[At a meeting of the Edinburgh Obstetrical Society, held recently,]

Prof. Simpson stated, that for some time past he had used chloroform in a manner somewhat different from that in which he was formerly in the habit of administering, and recommending it to be administered; and he believed that by the new method the patient was more rapidly anæsthetized, and at the same time a great saving was effected in the quantity of the drug employed. The difference in the two modes of administration consisted in this, that according to the old plan the fluid was poured upon a cloth folded into several layers, and the hand of the administrator had to be kept between the cloth and the patient's face, in order to ensure the due access and admixture of air; while, in following out the new method, *one* single layer of a towel or handkerchief was laid over the patient's nose and mouth, taking care not to cover the eyes, and on this single fold the chloroform was poured, drop by drop, until complete anæsthesia was induced. There was little or none of the drug lost by evaporation when it was administered in this manner, for the patient inhaled it at the moment when it was poured on the cloth, and inhaled it mixed with a sufficient quantity of air, which was easily inspired through a single layer of any ordinary napkin. Dr. Moir had been long in the habit of administering chloroform in this way upon a handkerchief thrown over the patient's face. He (Prof. Simpson) believed it would add to the safety with which the drug might be employed, to administer it in the manner he had described. He had often feared lest the lives of patients should be sacrificed by the careless manner in which, in particular,

students and young practitioners sometimes applied the damp folded cloth over the patient's face, without admitting a sufficient supply of air; and he had no doubt that many of the deaths attributed to chloroform were due only to the improper administration of it, and were, consequently, no more chargeable on the drug itself, than were the many deaths resulting from accidental overdoses of opium, &c. But the dangers from careless and improper administration would be diminished if there were never placed over the patient's nose and mouth more than one single layer of cloth, moistened with a few drops of the fluid. The first patient to whom he had administered it in this manner had been chloroformed several times previously, and had never gone to sleep till an ounce and a half or two ounces of the fluid had been employed; but when administered drop by drop on a single layer of a thin towel, one drachm had sufficed to induce the most profound sleep. It had thus all the advantages that had ever been claimed for the complicated apparatus which some medical men were still in the habit of using. There was only one precaution to be attended to in employing chloroform in this manner, viz., care should be taken to anoint the lips and nose of the patient beforehand with oil or ointment, to prevent the skin from being injured by the contact of the fluid that resulted from the close application of the wetted towel to the patient's face.

Dr. Peter Young stated that he had recently administered chloroform in the manner described by Prof. Simpson, to a patient in labour, and that he had kept her asleep for ten hours with only two and a half ounces of the drug.

Dr. Keiller remarked upon the difficulty that was occasionally experienced in putting some patients to sleep, and stated that a hysterical patient then in his ward had used an enormous quantity of chloroform before she could be brought under its influence. But he had no doubt that had it been administered in the manner Dr. Simpson had just proposed to do, a much smaller quantity would have sufficed; and he might state that when he himself suffered from severe earache on one occasion, he had put one or two drops of chloroform on cotton wadding and held it into his mouth, and a very few deep inspirations served to relieve the pain. He (Dr. Keiller) had since then frequently applied chloroform very advantageously in this way in cases of tic and other neuralgic affections.

Dr. Alex. R. Simpson had administered chloroform in the manner under discussion in a considerable number of cases, and always with the result that a great saving was effected in the quantity employed. He had the day previously kept a boy, on whom Mr. Edwards was operating, asleep for more than half an hour with between two or three drachms of chloroform, and

some of the fluid first poured out was lost in consequence of the resistance made by the patient to its administration.—*Edinburgh Medical Journal, Dec.* 1861, *p.* 593.

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## 109.—INDUCTION OF PREMATURE LABOUR IN A CASE OF ALBUMINURIA WITH PUERPERAL CONVULSIONS.

By Dr. Robert Barnes, Physician to the Royal Maternity Charity.

The following case exhibits in a striking manner the remarkable power of bringing gestation to a close which we possess in the operation of dilating the cervix uteri by means of fluid pressure:—

6th November, 1861. My assistance was requested by Dr. Tidy, of Hackney, in the treatment of a case of convulsions. The patient was a young woman, the wife of a butcher, and had, till her present illness, enjoyed good health. She married in March, and was believed by her friends to be in the seventh month of her first pregnancy. Some weeks ago slight swelling, impeding the free use of her hands, was observed; but there was nothing distressing until the 3rd instant. Since this date anasarca has become rapidly general and considerable. On the 5th, having complained of blindness, she was seized with eclampsia, and remained more or less comatose. Dr. Tidy bled her to ten ounces. The effect of this bleeding was very satisfactory. There were no fits after eight a.m. of the 6th, but she lay comatose, though not always profoundly so. The bowels were freely relieved by a purge. I saw her at half-past five p.m. of the 6th. She was semi-comatose; did not answer questions; the pupils could not be observed, owing to the strength with which she clenched the eyelids when touched; pulse 100; tosses about; face, neck, and hands much swollen; face cyanosed. Urine had been freely passed in bed. Blood drawn yesterday shows a large, loose, red clot, not buffed. The os uteri was not at all open, but admitted tip of finger on pressure: it was reached with difficulty. The peristent coma, which had already lasted more than twenty-four hours without signs of remitting, determined us to deliver. The membranes were punctured with a knitting-needle; a little liquor amnii escaped; the head presented. The patient was left for two hours, to allow the uterus to contract and prepare for expansion of the cervix. At eight p.m. we met again. A pint of urine was drawn off. The os was but slightly open; there was no indication of labour, and the patient's general condition was not more promising. I

applied a caoutchouc dilator, distending it with water, in the first place, to the vagina, so as to remove all obstructive rigidity in this part of the parturient canal. The vagina was quickly expanded, giving more freedom for further manipulation, and slightly opening the os externum uteri. I then applied a dilator mounted on a flexible metallic stem inside the cavity of the cervix; by gradual distension during thirty minutes a considerable expansion had been gained; three fingers could be introduced, and feeble labour-action was excited. She was given thirty minutes more to allow this action to work. At nine p.m. the os uteri was a little more dilated; but the pains were so feeble that there seemed no certainty of delivery being effected spontaneously for many hours. I therefore sought to deliver by bimanual version; but owing to the great length of the cervix and of the uterus proper, which was a rigid cylinder, the absence of liquor amnii, and the tonic contraction of the uterus, I did not succeed readily. A loop of cord came down before the head; it was pulseless. The head was perforated at once, and forty minutes were spent in careful extraction by the crotchet, the bones affording but slender hold. The uterus contracted well, and cast the placenta. Chloroform was administered during the operation for the purpose of securing the quiescence of the patient.

On the 13th November I learned that consciousness quickly returned after the delivery; the anasarca soon disappeared, and the patient did well.

The urine drawn by catheter was acid, turbid, loaded with albumen, specific gravity 1024; it contained 1·66 grains of urea in 100 grains. After standing forty-eight hours it yielded abundant crystals of uric acid, and numerous sporules and strings of sugar fungus.

*Commentary.*—The interest of this case consists in the rapidity, certainty, and safety with which labour was induced and completed. Under the ordinary methods delivery could not have been counted upon in less than twelve hours, if even so soon. Coma would have persisted, eclampsia would almost certainly have returned, and death would probably have supervened whilst delivery was being expected. By the method adopted, in two hours, security was attained for the mother, relief from anxiety by the friends, and for the medical attendants there was the pleasing consciousness of having triumphed over a formidable disease. I know of no obstetric operation more certain or more successful. It is a saving operation in some of the most appalling and imminent emergencies in midwifery. It obviates the loss of time, where the loss of minutes is the loss of life.—*Lancet, Jan.* 24, 1862, *p.* 4.

## 110.—CASES OF CONCEALED ACCIDENTAL HEMORRHAGE AT THE FULL TERM OF UTERO-GESTATION.

By Dr. J. G. Wilson, Physician to the Glasgow Lying-in-Hospital.

[A case of concealed accidental hemorrhage, especially where it occurs before delivery, is a complication of an alarming and very deceptive kind. It is very embarrassing to the inexperienced practitioner, since the cause of the syncope and other symptoms is not immediately apparent.]

*Case* 1.—On the 9th of May, 1855, I was called to see Mrs. ——, aged 34, a pluripara, of a lax, leuco-phlegmatic habit of body, and who was on the eve of her confinement. This forenoon, when actively employed in the discharge of some household work, she was suddenly seized with great faintness and exhaustion. On the occurrence of these symptoms I was requested to visit her. On my arrival I found her in a state bordering upon complete syncope, with a small thready, tremulous pulse, and general pallor and coldness of the surface of the body. She complained much of nausea and retching, restlessness, vertigo, dimness of vision, ringing sound in the ears, &c. I immediately prescribed brandy and ammonia, which had the effect of reviving her a little. There was no appearance whatever of any external hemorrhage. The abdominal enlargement was such as is usually met with at the full period of pregnancy. Towards the right side of the fundus uteri there was a distinct, prominent, and circumscribed swelling, which was not previously observed by the patient. This swelling had a peculiar doughy feel, and was the seat of a peculiar "bursting" sensation. The patient had no labour-pains, and the os uteri was only so far dilated as to admit the tip of the examining finger. Suspecting internal or occult accidental hemorrhage, I punctured the membranes and administered ergot with the view of inducing labour. In the course of three hours thereafter uterine action supervened, and in four hours subsequently I applied the forceps and delivered the patient of a full-grown but still-born child. The infant presented a very anæmic appearance. During labour very firm external pressure, by means of a compress and bandage, was applied over the abdomen, and particularly towards the fundus uteri. Notwithstanding the free administration of brandy and other stimulants, the patient all this time suffered much from faintness and depression. There was, however, no perceptible increase of the swelling or fulness above mentioned. Immediately after the removal of the placenta two or three very large coagula were passed *per vaginam*. There was no hemorrhage of any consequence after the discharge of these clots. The pla-

centa, on examination, presented a peculiar bell-shape appearance. It had a large cup-like excavation or concavity on its uterine surface, which was fully occupied by coagulated blood. This hollowed out appearance was evidently occasioned by the pressure of the effused blood. The placental substance, towards the centre especially, appeared much denser than usual—this was also ascribed to the compression exerted by the extravasated blood. The placenta seemed free from all disease. The patient made a slow recovery, but eventually did well.

*Remarks.*—In this case I think that the sudden and extreme exhaustion was, beyond all doubt, due to occult intra-uterine hemorrhage. The appearance of the placenta was such as to warrant the supposition that the hemorrhage was in a great measure, if not altogether, confined within the limits of the placental site. The fulness observed, and the "bursting" sensation experienced on the right side of the uterine fundus, was evidently caused by the circumscribed effusion of blood in the utero-placental region. From the pale and exsanguine aspect of the infant, I am satisfied that its death was occasioned by the hemorrhage. To no other cause could I attribute its death. The same plan of treatment should, in my opinion, be had recourse to in cases of this kind as would be adopted were the blood making its appearance outwardly.

The following is a rare instance of fatal hemorrhage, altogether confined between the placenta and uterus.

*Case* 2.—In September, 1853, along with the late Dr. Alexander Stewart, I inspected the body of a woman who died suddenly undelivered, apparently at the full period of pregnancy. On inquiry we ascertained that she was engaged with her ordinary domestic duties, in her usual state of health, till within two hours of her decease. Sudden and alarming faintness was the first symptom that attracted the notice of her friends, and she is reported to have been "just out of one faint and in to another" till she died. No blood had escaped externally. The abdomen generally presented the usual appearance observed at the termination of the ninth month of gestation. On the left side of the fundus uteri, however, a prominent but irregular fulness or swelling was observed, which had a soft doughy feel, and emitted a dull sound on percussion. On opening the uterus a full-grown female infant was found with the head presenting. The child had a blanched exsanguine appearance. The membranes were unruptured. The liquor amnii was quite untinged by blood. The swelling above referred to was found to correspond exactly with the situation of the placenta. Except at its extreme circumference, the placenta was wholly detached

from the uterus, and the intervening cavity was distended by a very large quantity of blood in a partially coagulated state. The placenta was of the average size, and exhibited no appearance of disease. Careful examination of the other abdominal and thoracic viscera revealed nothing abnormal.

*Remarks.*—This case is interesting not only on account of the concealed character of the hemorrhage, but also in consequence of its confined situation, and the unfortunate result to which it led. It clearly shows and fully proves what I know is disbelieved by some, and very much doubted by many, viz., that a quantity of blood, sufficiently copious to destroy maternal life, may be effused between the uterine surface of the placenta and the corresponding uterine wall. The placenta in this case, as in the last, presented a peculiar bell-shape, or basin-like appearance; with the exception of its margin, it was entirely separated from its connection with the uterus, and the interspace between the two contained an immense quantity of coagulated blood. This detachment of the placenta was apparently of spontaneous origin, there being no evidence of external violence. It is certainly remarkable that the edge or circumference of the placenta should have maintained so perfect and complete adhesion to the uterine parietes, while the central portion was subjected to so much stretching and distension. Two cases somewhat similar to the one now related are mentioned by Drs. Hardy and M'Lintock, in their "Report on Midwifery and Puerperal Diseases," (p. 194). An instance of the same kind is recorded in the 'New Medical and Physical Journal,' (1813, No. 38, 535). The post-mortem examination in this case showed—"that a separation of the centre of the placenta from the parietes of the uterus had taken place, whilst its edges were completely adherent, forming a kind of cul-de-sac, into which blood had been poured to the amount of a pint and a half, which had become coagulated within the cavity thus formed."

The subject of concealed uterine hemorrhage appears to me not to have received from writers on systematic midwifery that amount of attention and consideration which its importance demands. In many obstetric treatises no allusion or reference whatever is made to such an occurrence. The 'Glasgow Medical Journal' for April, 1854, contains a very excellent paper on this subject, by Dr. Joseph Bell of this city. Dr. Bell illustrates his paper by the details of three most interesting cases. In the Transactions of the London Obstetrical Society, for 1860, will be found a valuable communication on the same important subject by Dr. Hicks, of Guy's Hospital, in which he relates twenty-three instructive cases, collected from various sources. Both of these papers will amply repay careful and attentive perusal.—*Glasgow Med. Journal, Jan.* 1862, *p.* 439.

## 111.—ON THE MANAGEMENT OF THE PLACENTA.

By Dr. P. Mc Losky, Rothwell, Northamptonshire.

[It is a singular fact that at the present time there should be so much difference of opinion as to the proper mode of conducting the third stage of labour. All agree that where the placenta remains entirely, or in part, in utero, and flooding occurs, the practice is, to remove it; but a wide difference exists as to the manner of doing this.]

I am of opinion that a man always carries about with him the requisite machinery for successfully overcoming all the difficulties of the third stage of labour. This machinery consists of his head and hands; and I would reckon it bungling practice where the woman would be left with the placenta, or part of it, *in utero*, or permitted to die from uterine hemorrhage. Without offering any opinion with regard to what I consider the best practice in managing the various difficulties liable to arise in the supplemental stage of labour, I shall briefly state what my practice is to prevent their occurrence; for I known that, however fond of abstract reasoning men may be, they can seldom be reasoned out of their habitual practice: a little compliment to their own self-conceit.

I may state that, in every labour which I conduct, whether hemorrhage be suspected or not, my practice is invariably the same, and in no single instance do I avoid adopting precautions. When the head and shoulders have been expelled, the perineum no longer needs support; the left hand takes charge of the child, to protect the air-passages and prevent sudden expulsion; the right hand, either passed over the right side, or slid betwixt the thighs (the woman, of course, being on her left side), is placed on the fundus and body of the uterus. The pain which delivers the nates is the signal for the right hand to grasp the fundus with a firm, steady, downward, moderate pressure. On the contracted ball of the uterus, the hand of an assistant is placed in a similar grasping manner, the child being separated and given to the nurse. The right hand, after being rapidly run along the cord to ascertain the placental position, is again immediately placed on the uterus, the cord being run around the fingers of the left hand close to the vulva. Gentle tension shews the strength of the cord; then if the uterus continue hard and equally contracted, alternated pressure on the fundus, body, and cervix, with moderate traction of the cord. is kept up till the placenta is either expelled or comes into the vagina, when an expiratory effort with steady pressure on the uterus, aided by the left hand's traction on the funis, or on the margin or fold of the placenta, accomplishes the delivery. When relaxation

occurs, smart friction with points of the fingers pressed against the walls of the uterus; pinching, kneading, and otherwise manipulating in a lively manner over its whole surface, soon produces partial or entire contraction, when the organ can again be grasped, and pressed gently downward, all the while keeping a strain on the cord. When the placenta is high towards the perineum—when low and in the vagina towards the pubis—for several minutes after the expulsion of the placenta, the right hand every few seconds is passed over the uterus to feel if it remain hard; if not, a more gentle manipulation is practised till it become so, and then the bandage applied. In the great majority of cases the placenta is expelled within ten minutes of the birth of the child. I care not to wait for pain, I create it. The peculiarity of this is, that the uterus has constant support from the moment of the fœtal, up to that of the placental expulsion by the practitioner's own hand, a living sentient compress.

The *rationale* of this is: we know that the uterus has motor power from three nervous sources—the cerebral, spinal, and ganglionic. It has an independent power of its own also. We know that the abdominal muscles have a powerful influence on the expulsive power of the uterus, by the immense pressure rousing its reflex actions, and we know that the sudden withdrawal of their support from more than one viscus produces syncope, sometimes death; and in case of the uterus, inertia, or spasmodic contraction: therefore the continuous support of the hand, not simply on the abdomen, but actually on the uterus, supplies that of the muscles, while the frictions, pinchings, and various manipulations excite its reflex and peristaltic actions, partly by the irritation of pressure, and partly by exciting its ganglionic reflex action through volition acting on the muscles of respiration. In certain cases, say dropsy, fatty degeneration, phthisis, or hemorrhagic diathesis, to these means might be added the centre spinal action, induced by ergot administered a few minutes before delivery; but my main reliance would be on *my hands*, as it would be in every hemorrhage of this stage of labour.

For the last eight years, in a midwifery practice not inconsiderable, I have invariably adopted this mode; and during that time I have not met one single case of uterine hemorrhage, neither have I ever known the least ill result from the amount of pressure used. By this mode every uterus can be made to contract except a moribund one—and I have such confidence in its safety, usefulness, and superiority, that I shall never cease to adopt it. It has now been tried by me in over two thousand cases without a single accident.—*British Med. Journal, Feb.* 1, 1862, *p.* 116.

## 112.—PARTIAL PLACENTAL-PRESENTATION AT EIGHT MONTHS.

By Dr. Francis H. Ramsbotham, Obstetric Physician to the London Hospital.

At 4 p.m. on January 23, 1840, I was sent for by a medical friend to Mrs. P., Bethnal-green-road, in labour of her fifth child near the end of the eighth month of gestation. She had suffered occasional attacks of hemorrhage for between two and three months. On that morning uterine action commenced, and a large and sudden gush of blood occurred, producing faintness. The discharge continued in a trifling degree throughout the day, with slight pains. I found her very much depressed; os uteri dilated to a size larger than a crown piece; the membranes still whole; fully a third of the placenta hanging in the vagina; head presenting. I ruptured the membranes, hoping that the pains would come on more actively, and that the head being pressed strongly against the os uteri would plug the bleeding vessels, and thus put a stop to, or at least materially diminish, the draining that was going on. Ergot was also given with brandy to excite increased action. These means not producing the desired effect, I determined to deliver by turning, and did not expect to experience much difficulty. In this again I was disappointed. Though the os uteri was so widely open, the cervix resisted the introduction of the hand, and I never fully passed it into the cavity. I managed, however, to get down a foot, and was thus enabled to "turn." The delivery occupied half-an-hour; the chief difficulty consisted in bringing the head through the os uteri, which part of the operation took up twenty minutes. The child was dead. The placenta was expelled immediately, and the woman recovered without a bad symptom.

N.B.—I have often experienced much difficulty in endeavouring to introduce the hand into the uterus, for the purpose of turning the child, when the case has been premature by one or two months, from a constricted ring within the os uteri, although that organ itself has appeared sufficiently flaccid to admit it easily. And this I have attributed to the undeveloped state of the cervix; especially since I have found that the farther from the end of gestation the labour has come on, the greater has been the resistance opposed.—*Medical Times and Gazette, Jan* 4, 1862, *p.* 4.

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## 113.—ON PREPARING FOR TURNING IN DRY LABOURS.

By Dr. Langer, Davenport, Iowa.

Dr. Langer speaks in the highest terms of the following plan which he adopts for facilitating turning, when this is required in

"dry" labour:—"Previous to turning, I place the patient on her back, side, or on her elbows and knees, as the case suggests, the better to enable me to introduce into the os tincæ two or three fingers to reach the child. With these I endeavour to carry between the head and shoulder, if it is a shoulder presentation (or near any convenient part according to the malposition), a large elastic catheter, whose orifice and pointed end are filled to the length of one inch, with clean lard, which has been kept at a low temperature, the mouth-piece of the catheter being attached to an elastic tube connected with a stopcock and an elastic Davidson or other forcing pump. Before connecting the catheter with the pump, I fill the catheter with sweet oil, at blood temperature, and lock the cock to keep the air out. I now endeavour to introduce the catheter as high up as practicable into the cavity of the uterus; better, if possible, between the ovum and inner walls of the uterus, but always opposite to the attachment of the placenta. Having reached with the point of the catheter the required height, I connect the catheter with the pump, filled with tepid oil, the free end of the pump being immersed in a vessel containing oil kept at the same temperature. I inject with a small degree of force, in the interval of pains, from a pint to a quart or more of oil, directing the patient between the injections to change her position from back to side, or elbow and knees, and *vice-versa*, even to sitting or walking. On one occasion when I could not get oil I used the white of egg. From this simple operation I have noticed the most pleasant results, namely, I have seen patients who had been for twenty-four hours and more in intense suffering, in a comparative short time calming down, with contractions of the uterus less annoying, the uterus, too, becoming more pliable to the hand for the operation of turning. No great difficulty was then experienced, and the employment of force was not required. Nay, I have succeeded even, after such preparation, in changing a malposition into a normal one, by the combined method of internal and external manipulation, without introducing the hand into the cavity of the uterus. The patients so treated have had less symptoms of nervous shock, and have exhibited far less the consequences of the dreaded operation, and consequently their recovery has been more speedy."—*American Medical Times and Medical Times and Gazette, Nov.* 16, 1861, *p.* 511.

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## 114.—A NEW INSTRUMENT FOR CRANIOTOMY.

By Dr. Lewis D. Harlow.

This instrument Figs. 1 and 2, which I have named the craniodiaclast (signifying an instrument for *breaking through* the skull),

or more briefly, the *diaclast*, is unlike any other heretofore i use, as will be seen by the following description.

The handle and shank are similar to those of the commo trocar, differing only in respect to size, and are, when measure together, eleven inches in length. But the chief peculiarity the diaclast is that portion used for perforating the head.

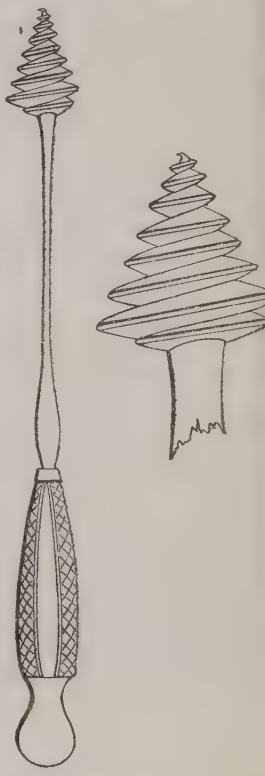
This consists of a large cone-shaped screw, resembling in form a boy's top, with which every one is familiar. Its length, and the diameter of its base are *equal*, each being one inch or a little less.

The threads of this spiral cone, or conoid screw, are small and near together just at the point, but increase regularly and rapidly, in size and distance, and become rounded and smooth as they wind from the apex to the base. They present, therefore, no sharp, cutting edges, by which the soft parts of the mother can possibly be wounded; the point only requiring to be guarded until brought in contact with the child's head.

The small end is like that of a common pointed screw, and is made of the best tempered steel. It readily penetrates the cranium by a semi-rotary, drilling motion, and enters, by a few facile turns, wholly within the cavity. This entrance is effected (after the penetration of the point) by the mechanical power of the screw alone; as the spiral beyond the point has no *cutting* edge; but that power has been proved experimentally to be amply sufficient.

As it makes its way through the skull, the bone is broken in pieces, and the fragments are forced asunder, as if the head

Fig. 1. Fig. 2.



(Cranio-) Diaclast.

Fig. 1.—View of instrument, reduce size.

Fig. 2.—Screw, natural size.

were being riven by a wedge. Its withdrawal in a direct line requires considerable force, but has the advantage of still further breaking up the bones and leaving in the cranial vault a large open rent, through which the craniotomy forceps can, without difficulty, be passed.

On making trial of this instrument upon the well ossified heads of stillborn children, it was found to penetrate, with the greatest ease, the base of the skull or the face, at any point, and separate the fractured pieces, at the will of the operator; thus showing its perfect adaptation to cases of breech-presentation (after the body has been delivered), and of face presentation, when these are complicated with so great pelvic deformity as to render embryulcia unavoidable.

The advantages of the diaclast may be summed up as follows :—

1st. It is simple in construction.

2d. It is perfectly safe.

3d. It may be used with the greatest facility.

4th. It is efficient and adapted to all cases.—*American Jour- of Medical Sciences, Jan.* 1862, *p.* 281.

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## 115.—ON THE UTERINE DOUCHE AS A THERAPEUTIC AGENT: NEW INSTRUMENT.

By Dr. Graily Hewitt, Physician to the British Lying-in-Hospital.

The employment of the uterine douche in the treatment of certain diseases of the uterus was, the author remarked, no novelty. The beneficial action of cold water applied by means of the douche to the portion of the uterus accessible to its action from the vagina, in the treatment of chronic leucorrhœa and allied affections, had been recognised by many authorities. But although the principle in question was recognised, it could scarcely be said that the use of the uterine douche was by any means widely practised; in point of fact, it was very rarely employed by the profession at large. One reason why the douche was so little employed was, that there was no ready and efficacious mode of administering it. The various forms of injection apparatus procurable were all more or less open to one of these objections: the quantity of fluid capable of being used was too limited, or manual effort was required, or possession of ingenuity on the part of the patient was essential. In order to administer the douche effectively an instrument is required at once portable, necessitating no mechanical or other effort on the part of the patient, and admitting the use of a large quantity of water. The fatigue attending the use of

ordinary forms of injection apparatus interfered most seriously with their usual employment. The high opinion which the author entertained of the therapeutic power of the uterine douche induced him to devise an instrument which should fulfil the necessary indications.

The apparatus now exhibited to the Society (ingeniously constructed under the author's directions by Mr. Thos. H. Savory of the firm of Savory and Moore, of New Bond-street) is extremely portable; the whole is contained in a box seven inches across and four inches deep. It consists of an india-rubber vessel, folding up like a "Gibus" opera-hat, and from the bottom of which a long flexible tube conveys the fluid. When opened out, the rigidity of the reservoir is maintained by a brass rod screwed in its centre. The reservoir holds nearly a gallon of water, the whole of which can be used at one operation. The action of the douche, which is not that of the syphon, is dependent entirely on gravitation; all that is necessary to set it in action is that the reservoir be placed on some object a foot or two above the seat or couch on which the patient is reclining. On turning the stopcock the water flows continuously, fast or slow as may be desired, through the vaginal tube until the reservoir is empty. The instrument possesses all the requisite qualities: it is portable, self-acting, and not likely to get out of order.

In cases belonging to any of the following categories, irrigation of the os and cervix uteri, which could be most perfectly and easily carried out with the aid of this instrument, would be found of very great service:—Cases of profuse menstruation dependent on the presence of a lax condition of the vessels of the uterus, giving rise in many cases to prolapsus uteri; chronic leucorrhœa, proceeding from the same cause; enlargement of the uterus, proceeding from defective involution after pregnancy or after abortion; cases of engorgement of the lips of the os uteri, associated with hypertrophied condition of the mucous membrane and excessive secretion of the mucous follicles of the cervix; in all cases, indeed, in which there is undue fulness of the uterine vessels, or defective tonicity of the muscular fibre generally.—*Lancet, Feb.* 22, 1862, *p.* 202.

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116.—*Arrest of Secretion of Milk.*—Dr. Harriss, of Savannah, employs a saturated solution of camphor in glycerine in preference to belladonna. It is gently applied over the surface by means of flannel, several times a day. The same solution, with the addition of four grains of tannin to the ounce is of utility in sore nipples.—*American Med. Times, No.* 15, *and Med. Times and Gazette, p.* 511.

## 117.—ON PUERPERAL FEVER, REGARDED AS AN EPIDEMIC.

By Dr. R. Uvedale West, Vice-President of the Obstetrical Society of London.

[Dr. West gives a numerous series of cases of puerperal fever. No other hypothesis than that the infection was conveyed by the accoucheur and communicated by manipulation will explain the facts, unless, indeed, we may look on the whole series as an epidemic, a view which would seem to be corroborated by the occurrence of well-marked diphtheria as a symptom in two of the cases. He says:]

On the 4th of March, 1859, I was hastily summoned to visit a woman in the country who had three days previously been delivered by a midwife after an average easy labour—fifth pregnancy. I found her suffering from acute peritonitis, with a peculiar swollen condition of the abdomen, which I judged, from what I could learn of the patient's previous history, was caused by the presence of an ovarian tumour. The woman was very bad, and died three days after, March 7th. I found, on a post-mortem examination which I made the following morning, a large unilocular cyst of the left ovary filled with the usual fluid and occupying the abdomen, so as to push up the small intestines into the left hypochondriac region. The peritoneal covering of the cyst was black and gangrenous, as was that of the small intestines. The colon was much distended with flatus. It was, therefore, a case of acute peritonitis, involving chiefly the peritoneal covering of an old standing ovarian cyst, and terminating rapidly in gangrene. My attendance on this case, and especially perhaps the post-mortem examination of the subject of it, were followed in my midwifery practice by an unusual proportion of febrile diseases of the puerperal state, caused either by direct contagion or by some epidemic influence, that I think it may be instructive if I introduce in this place some account of the whole of the cases of midwifery attended by me during the months of March, April, May, and June; with which last month the epidemic, if epidemic it was, ceased. I may premise that having felt a wholesome dread of the possible consequences to my lying-in patients of my having conducted this unlucky autopsy, I took every possible precaution, by way of disinfection, such as many ablutions, entire change of wearing apparel, &c., to obviate what I was afraid would take place. On a gross loss of forty-eight midwifery cases attended between the 8th of March, the day of the post-mortem examination, and the end of June, there were ten cases of puerperal disease sufficiently grave to excite considerable apprehension for the result, although they all recovered. This was surely a very

undue proportion. Although some of them, as did the case from which they all appeared to originate, exhibited inflammatory symptoms, they were all, equally like that case, more or less asthenic in type, and were benefited by stimulant or tonic treatment.—*Glasgow Med. Journal, Jan.* 1862, *p.* 404.

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## 118.—ON PUERPERAL FEVER.

By a Correspondent of the 'Medical Times and Gazette.'

The building of a new Lying-in Hospital in Munich, was commenced in 1855, and patients were first admitted into it in 1859. Unfortunately, puerperal fever some became endemic in the Hospital, and no year has yet gone by without us having been visited by this terrible scourge. The most intense epidemic was that of last year, and I will to-day communicate to you some of the most important observations which were made at that time by Dr. Hecker, who is Professor of Clinical Midwifery, and Dr. Buhl, the Professor of Pathological Anatomy.

During summer and autumn of 1859, the sanitary condition of the women in the Lying-in Institution was, on the whole, satisfactory. Certain premonitory symptoms of an epidemic of puerperal fever having been observed towards the close of the year, the first bad cases of that disease occurred in the middle of January, 1860. The epidemic lasted from that time till July. There were 663 births in the six months, and 80 women were affected with the fever, that is twelve per cent. Of these 80 there died 33, that is 41 per cent of those affected, and 5 per cent of the whole number. Simultaneously with the puerperal fever a very dangerous affection of newly-born infants was observed, which was quite analogous to the disease from which the mothers suffered. Amongst the 33 children of the 33 women who died, 20 also died within the first week, and evidently under the influence of the epidemic. Of 49 children borne by 49 women who recovered, 12 died from the same cause. The disease of infants showed the following forms:—

1. Acute dissolution of the blood; of which 13 cases were observed. The children collaped soon after birth in an extraordinary manner; the skin assumed a dirty yellow colour; food was refused, the respiration became accelerated, and screams were heard as in acute hydrocephalus. Death generally ensued within 24 hours, and the post-mortem examinations which were made in every case with the utmost care, did not show any local disease; only the blood appeared smeary, and there was a striking putrefaction of all organs, which are prone to this process, and which had evidently commenced during life; this

was observed even if the cavities of the body were opened soon after death. Cadaveric spots were spread over the whole surface of the skin. This septic condition generally began immediately after birth; but in one case Professor Hecker satisfied himself that it had already commenced in utero. This was the case of a woman in her second pregnancy, and who fell ill during during parturition with violent vomiting of green matter; she then gave birth to a dead child, and died herself on the third day after delivery. The child was a well developed girl, of 6⅝ pounds, and had died during parturition without any visible cause, as the umbilical cord had not been constricted, and the second period of parturition only lasted an hour and a-half; from which it was fairly concluded, that the illness of the mother, which had come on during paturition, had caused the sudden destruction of the life of the infant. If in such cases of dissolution of the blood, a local disease occurs, this affects the respiratory organs; the autopsy showing signs of lobular pneumonia having commenced. In two cases there was extensive hepatisation of both lungs, and putrid exudation.

The second class of cases consisted of septic inflammation of the umbilical vessels, with its sequelæ. Three cases of arteritis umbilicalis were observed, one of phlebitis, and four of more or less diffuse peritonitis, with discoloured exudation matter. In these cases there were also morbid appearances in the skin, viz., erythema, which in one case extended over the whole surface of the body with a rapidly fatal result; and erysipelas migrans with strong induration of the affected parts, and which appeared several times in the face.

A third class of cases was characterised by atrophy. This form of the disease was observed in four cases; the subjects being originally strong children, and no cause being apparent but the miasma.

Regarding etiology it appeared that the stay of the pregnant women in the Lying-in Hospital, disposed them to puerperal fever. The majority of patients fell ill within the first week of their stay in the institution. Of those who entered it during parturition, 13·8 per cent. fell ill, while of those who had been in it from 1 to 4 days before delivery, 29 per cent. became affected. If, however, the pregnant women remained longer in the hospital, they appeared to become callous to the contagion. In the wards for poor patients the disease was much more frequent than in those for private cases. It would seem possible that the clinical instruction of the students in the examination of pregnant and parturient women might be the cause of the affection, and M. Semmelweiss even now holds the opinion that the origin of the disease is entirely due to infection with cadaveric poison.

But several objections seem to be fatal to this supposition. During the epidemic I am speaking of, there was no occasion for such an infection of the pregnant women taking place. The autopsies were never made in the Lying-in Institution itself, but in the anatomical theatre; and neither the students nor those who had the women under their care, ever touched the dead bodies. Besides, the hands were always well washed before an examination was made. Moreover, it happened that infants fell ill and died of puerperal sepsis, whose mothers made a good recovery. This fact is not consonant with the assumption of an infection by cadaveric poison. It would be sophistry to say that, although the mother seemed to be well, she was nevertheless infected; for where there is no morbid symptom, we are not justified in assuming the existence of a complaint. Another objection against the theory of M. Semmelweiss would be, that the women fell ill in sets, and that sometimes not a single case of fever occurred during a fortnight. It has often been stated that there was much more disposition to contract the fever in women, who had had a protracted labour; and that primiparæ were, therefore, more exposed to danger than such as had already borne children before. The observations made here on this point during the last epidemic prove many fell ill whose labour had been very quick, and that the duration of the labour had no relation to subsequent illness. I will also mention that of 80 cases in which fever occurred, birth was accomplished by nature in 75 cases, while only in five instances operation were necessary.

The researches of Professor Buhl concerning the pathological anatomy of this disease are of importance. Proceeding from the fact that the inner surface of the uterus is always affected, he looks upon this as the starting point of all other morbid changes. The disease spreads from the place mentioned along three different roads, viz., the mucous membrane of the tubes, the blood-vessels, and the lymphatic vessels. In conformity with this circumstance there are three principal forms of puerperal fever. The first is puerperal peritonitis without pyæmia; the irritant matter produced in the uterus spreads through the canal of one or both tubes, and through their orifice into the peritoneal cavity; their tissue becomes swollen, loosened, and injected, and the canal is filled with thick pus. There is either unilateral inflammation of the serous covering of the ovary and the womb, or general peritonitis. This form is most frequent if there be no epidemic; but during such an one it is very rare, and only occurs in connexion with one of the other forms. Not a single case of this kind occurred during the epidemic I have described. This form is not nearly so dangerous as the

two others, recovery being not uncommon; and if death results, this is generally the consequence of general peritonitis.

In the second form, which is puerperal pyæmia without peritonitis, the inner surface of the womb constitutes, as it were, one large wound, and the affection is traumatic. There are symptoms of absorption of putrid matter by the veins, and we find not only normal coagula, but also thrombi containing pus, and prone to putrefaction, especially in the veins at the insertion of the placenta; also in the veins of the plexus pampiniformis, the spermatic veins, the vena cava inferior, the renal or crural vein and the cavities of the heart. There is often embolic inflammation, followed by suppuration and gangrene of the lungs, the spleen (which is always enlarged), the kidneys, the eyes, the brain, and other organs. The characteristic feature of this form is that, unless a complication should be present, which is rarely the case, there is no peritonitis. It is more dangerous than simple peritonitis, and may occur sporadically; but it is more frequently epidemic, although neither so common nor so intense as the third form. It is not unfrequently an indication that the violence of the epidemic is on the decrease. For while pyæmia without peritonitis scarcely ever ends in death before the ninth day, but is generally protracted over two, three, and more weeks, the third form generally proves fatal within the first week after parturition, and in some cases even the very day after delivery, or a few hours after it. This second form was, in the epidemic I have described above, only observed four times.

The third form is entirely different from the second and the first. There is always peritonitis, but no thrombosis of the veins, which are merely filled with thin, discoloured blood. The disease spreads by absorption through the lymphatic vessels and the connective tissue which envelopes them and the blood-vessels, and where yellow coagula, pus and putrid matter, are accumulated. Besides this local reeping of the disease, there is also general infection by absorption of poisonous matter in the blood, either immediately from the womb or from the infected lymph. This form may, therefore, be called puerperal pyæmia with peritonitis, or pyæmia with lymphangitis. It is the most malignant form regarding intensity, rapidity of course, and fatality, and it is also the most frequent in epidemics of puerperal fever. Of thirty-nine fatal cases in the last epidemic, thirty-five belonged to this form. If death ensued very rapidly, there were only general septic appearances in the body; and local changes only became apparent if the disease was of a somewhat longer duration.—*Medical Times and Gazette, Feb.* 8, 1862, *p.* 142.

## 119.—ON PUERPERAL FEVER.

### By Dr. Fox and Dr. Tyler Smith.

[The following remarks were elicited at a meeting of the Obstetrical Society of London, by a paper read by Dr. Tilbury Fox. Speaking of the clinical history of the General Lying-in Hospital, Dr. Fox observed:]

In tracing the connexion between erysipelas and puerperal fever, the different epidemics formed links in the chain of gradation and identity; that all the symptoms of intense puerperal fever were produced in cases in which the most decided evidence of erysipelas alone existed, and therefore the assumption of a special peculiar disease *sui generis* (puerperal fever) was unnecessary; that in the case of primiparæ, lacerations to an appreciable extent being the rule, great facility of ingress and onset, so far as the poison of erysipelas is concerned, is their chief source of liability to attack, which latter appears statistically to be true.

Dr. Tyler Smith said the subject of puerperal fever was the most important which could occupy the attention of the society. The whole obstetric mortality of England and Wales exceeded 3000 annually. Of this number of deaths more than 1000 women, or nearly three daily, fell victims to puerperal fever; and it was the healthy and vigorous primipara whom it was most prone to attack. The obstetrist could put before him no nobler object than the diminution of this mortality. Unhappily, we could not look to treatment to accomplish this. Under various circumstances, and in different countries, every variety of treatment had been tried and found wanting. If not curable, it was however preventable. It was not, therefore, to treatment, but to prevention, that we must look for the means of dealing with it successfully. If epidemics of puerperal fever were less rife now than in former times,—and at present they rarely occurred, except from the crowding of women in lying-in hospitals,—it was because we lived under better sanitary conditions, and paid more special attention to preventive measures. We should surround every lying-in woman, as far as possible, with antiseptic precautions. Nothing, he believed, would tend more to diminish the frequency of puerperal fever than the full recognition of its infectious and contagious nature, in whatever way it first occurred. It would not so often happen if all accoucheurs recognised the fact that erysipelas, typhus, scarlatina, small-pox, hospital gangrene, putrid sore-throat, diphtheria, the post-mortem and other poisons were excessively prone, if brought near the lying-in woman, to originate puerperal disease. He did not question but that any of the agents which produced

zymotic maladies might cause puerperal fever, or that it might arise in individual cases from the retention and putrefaction of portions of placenta or membrane or coagula, or the decomposition of fibrinous clots in the uterine vessels, especially in women who were predisposed by hemorrhage, albuminuria, or other causes of debility; but contagion and infection, which might to a great extent be recognised and avoided, were its chief and most preventable sources. If all our means, in the way of prevention, were habitually brought into operation, he did not doubt that puerperal fever, instead of being the highest, might become a very moderate cause of obstetric mortality.—*Lancet, Nov.* 23, 1861, *p.* 501.

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## 120.—THE TREATMENT OF CHILD-BED FEVER.

In an epidemic of child-bed fever, which occurred some time ago in the obstetrical clinique of Professor Von Ritgen, the following plan of treatment was adopted, with exceedingly beneficial results, as even cases of the utmost severity were cured under its influence. At first $\frac{1}{8}$th of a grain of morphia was given, and this dose repeated two, three, or even four times a-day, according to the violence of the abdominal pain. An hour after the dose of morphia, a mixture of camphor was administered (℞. Camphor ℈ss., gummi mimos ʒj., aq. chamomill ʒiij., liq. ammon. acet., sacch. albi, āā, ʒj.); an hour after this the patient took one grain of quinine; then another dose of morphia, and so on, until the symptoms decreased, which was the case with all patients hitherto treated in this manner. In one, two, or five days, profuse perspiration came on, and the secretion of the urine, the lochia, and the milk was considerably increased; together with this a great improvement took place in the general condition of the patients. If the stomach was so irritable that it did not keep the medicines, nitrate of silver was first given, in order to diminish the gastric irritability; this had the best effect, as after it the medicines were well borne.

With regard to prophylaxis, I may mention, that quinine, even in large doses (of twenty to thirty grains per diem before delivery), did not prevent the occurrence of the fever, nor did it diminish the intensity of it when present. On the other hand, fumigations with aqua regia, which have been recommended by Mr. Wilson, proved to be of the greatest use, as after them no other case of the endemic occurred.—*Med. Times and Gazette, Nov.* 30, 1861, *p.* 565.

## 121.—ON THE PATHOLOGICAL ANATOMY OF PUERPERAL FEVER.

By Professor Buhl, Munich.

Professor Buhl having examined the bodies of fifty women who died of puerperal fever, states that a constant and characteristic appearance is a pappy, red or dark brown or greyish black mass lining the inner wall of the uterus, giving forth sometimes a gangrenous and sometimes a putrefactive smell. It is this matter which supplies the poisonous infection of puerperal fever; but as to the cause of the production of the fever differences of opinion prevail; some regarding it as the consequence of the immediate passage of poisonous matter into the wound, while others think that a preliminary poisoning of the blood by miasmata takes place, the corrupted mass being only a secondary result. Anatomically, we may distinguish two forms of puerperal fever—puerperal pyæmia and puerperal peritonitis—forms which may be clinically distinguished, as it is of importance in prognosis that they should be so.

Puerperal pyæmia does not usually prove fatal before the ninth day, and frequently not until after the third week. It is chiefly met with where the disease does not put on an epidemic form, the veins being the channel of infection; coagula, accompanied by suppuration, being found in the veins of the walls of the uterus, in a pampiniform plexus or in a spermatic vein. In no instance did the author ever find both spermatic veins obstructed, and in only one case was the entire vena cava inferior filled with adherent coagula. These coagula and their subsequent caseous metamorphosis are quite sufficient to establish the existence of puerperal pyæmia, the so-called metastatic abscesses being seldom met with. Œdema of the lungs and ecchymosis of the pleura were frequently met with by the author.

The puerperal peritonitis was more frequent, more violent and more rapidly fatal than the puerperal pyæmia, inasmuch as death sometimes occurred within two days after delivery and in but few cases was delayed to the third week. Of the 32 cases of this variety only 2 were chronic, proving fatal in the course of six or eight weeks. In all the cases purulent exudation was found, in 18 instances occupying the tubes, and in 1 the subserous tissue of the uterus. The two conditions were found combined in only 4 instances, and a plugged condition of the veins was observed only in 5 instances. Of the 18 instances in which puerperal pyæmia occurred, in only 2 was there pus in the tubes, and in only 1 subserous effusion of pus; so that of 20 cases of tubal suppuration, in 18 peritonitis was present, and of the 14 cases of subserous suppuration peritonitis occurred

in 13. On the other hand, of 23 cases of purulent coagula of the veins in only 5 did peritonitis occur, and in all these there was subserous or tubal suppuration also, and in 16 cases in which these parts exhibited no pus, no peritonitis took place. The disease of the veins thus bore no relation to the occurrence of peritonitis. It results from these facts, that peritonitis may arise either from the immediate passage of the poisonous material from the uterus through the tubes, or from the conveyance of this from the inner wall of the uterus by the lymphatics. The supposition that the pus may have proceeded from the peritoneum into the tubes is negatived by the fact of these having been free of it in fourteen cases; and the pus of the periuterine, subserous tissue, or of the lymphatic vessels, must be regarded rather as a consequence than a cause of the peritonitis, inasmuch as it was absent here in twenty instances. The prognosis is not alike in these two modes of origin of the peritonitis. That induced by pus from the tubes is a much slighter and more simple inflammatory process, met with when there is little or no epidemic extension of the disease; while the peritonitis resulting from lymphatic absorption is a much severer form of disease, preceding or accompanying general infection, and is especially met with in the epidemic form.

In both of the principal forms of puerperal fever, besides the morbid uterine appearances there were found—1. Almost constantly, swelling and watery infiltration of the retroperitoneal, inguinal, and (though seldomer) the mesenteric glands. 2. Osteophytes on the internal surface of the cranium. 3. In several cases, especially in pyæmia and lymphatic absorption, a distension of the cortical substance of the kidney, together with microscopical appearances corresponding to the acute stage of Bright's disease. In only two of fifty individuals was tuberculosis found.—*Med. Times and Gazette*, *Feb.* 1, 1862, *p.* 117.

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## 122.—ON PAINFUL MUSCULAR AND FASCIAL CONTRACTIONS ALONG THE VAGINAL CANAL.

By Dr. J. Y. Simpson, Professor of Medicine and Midwifery in the University of Edinburgh.

Professor Simpson said that he had lately seen a number of cases, and he had seen them from time to time for years, where painful muscular or fascial contractile bands existed in the sides or along the course of the vagina. He had known some of these cases to have been mistaken and treated for various alleged affections of the uterus or its appendages. The pains complained of were, sometimes principally sympathetic or reflex, and referred to the uterus or other parts, and often aggravated by all movements calling the pelvic muscles into action. He had

under his care at present a patient whose chief complaint was a constant disagreeable pain in the sacral region; another who had the same severe kind of pain in the left iliac region; while a third could not walk because of the pain which she felt in the pelvis whenever progression was attempted. In this class of cases the uterus and ovaries would, on careful examination, be found healthy, but a tense, corded, transverse band could be felt at some part of the vaginal wall, and usually, if not always on one side of it, and placed, as were, more or less deeply beneath or below the mucous membrane. The band or cord was most commonly placed about an inch above the vaginal orifice. It varied considerably both in thickness and tenseness in different cases. When the cord was touched and stretched with the finger, the patient complained of more or less severe suffering; and this was the pathognomonic mark of the disease. Sometimes the patient only experienced pain at all when the vagina was touched; and these cases usually came under treatment in consequence of being unable to submit to marital intercourse. He had one patient under treatment who could not bear at first to allow herself to be examined vaginally without chloroform, because of the pain experienced from the touch of the finger. Painful and distressing as these cases were, they were very amenable to treatment,—division or rupture of the tight and contracted band being usually sufficient to afford complete and often instantaneous relief; and in the milder form of cases, sedative applications were sometimes sufficient. The method he had usually adopted for the cure of very severe cases of this kind, was after chloroforming the patient, to divide the tight band by means of a tenotomy knife introduced underneath the vaginal mucous membrane. It was a bloodless operation, and had never been attended with any worse consequences than the formation of a thrombus, which had taken place in one patient and had delayed her recovery. He had tried also to effect the object of stretching or rupturing the band by dilating the vagina forcibly with the fingers, whilst the patient was asleep with chloroform. The principle of cure was the same as that employed for the relief of fissure and spasmodic contraction of the orifice of the rectum. But less severe means were occasionally successful. Patients afflicted with this complaint were usually relieved, and sometimes cured, by the daily introduction into the vagina for a length of time, of local sedatives, such as belladonna ointment and chloroform. A small cup-like indentation was made with the finger in an ordinary belladonna pessary; a few drops of chloroform having been poured in, and then shut in by putting a piece of ointment over the orifice, and then the whole was introduced into the vagina, where the ointment slowly dissolved, and became absorbed along

with the chloroform. As to the probable nature of these painful contractions, he (Dr. Simpson) could not supply any very definite answer, but he thought they depended in different cases either, first, on a kind of permanent spasm of some of the muscular fibres around the vagina, of the same nature as the spasm of the sterno-cleido-mastoid muscle, which produces torticollis; or, secondly, they were due to contractions going on slowly in some portions of the pelvic fascia, perhaps resulting from a kind of sabacute inflammation, and resembling those often painful contractions of the palmar fascia, which are the acknowledged cause of "crooked-in-fingers." Dr. S. believed that the common anatomical seats of these painful vaginal contractions were either in the bundle of muscular fibres forming the anterior border of the levator ani, or in the duplicatures or edges of the pelvic or recto-vesical fascia at the points where the vaginal canal perforates the fascia and receives insertions and prolongations from it. These contractions sometimes appeared in patients in whom no previous disorder of any of the pelvic organs could be ascertained to have existed; and he had lately seen one patient who was the subject of it, and who had never been able to allow her husband to approach her, so that in her the morbid condition must have been present before marriage, although she had never been in a position to be made aware of its existence. Instances, however, like this last oftener belonged to a class of cases where apparently the stricture was not, as in the preceding class, in the course of the vaginal canal, but was situated at its very orifice, independently apparently, in most, of all disease there except supersensibility and spasm of the sphincter of the vagina, but traceable in others to hyperæsthesia of the mucous surfaces of the vulva or vagina, resulting from irritable eruptions or other morbid states of these mucous surfaces.—*Edinburgh Medical Journal*, *Dec.* 1861, *p.* 594.

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## 123.—NEW INJECTING APPARATUS.

By Dr. J. Y. Simpson, F.R.S.E., Edinburgh.

Dr. Simpson showed how a tube, such as is used for the introduction of carbonic acid gas into the vagina, might be modified so as to serve along with an ordinary beer bottle, instead of a syringe, for applying injections and douches to the rectum and vagina. Dr. Scott of Musselburgh had been in the habit of employing the bottle and tube for some time instead of an enema syringe, and for the purpose of introducing food into the stomachs of insane patients who refused to swallow. A bottle filled with the required fluid, and stopped with the cork through which the tube passes, having been raised and turned

upside down, when the cork was partially withdrawn some air rushed into the bottle and sent out its fluid contents through the tube. He (Dr. Simpson) had got a cork made with a small secondary tube, which served to admit the air into the bottle, so that the partial withdrawal of the cork could be dispensed with, and whilst the bottle was held up with one hand, the other was left free to hold and direct the nozzle of the tube. The stream that issued from the tube might be made to run with a greater or less degree of force according to the height to which the bottle was elevated. Another simple form of injecting apparatus, on the same principle, consisted of the usual tin canister with which some enema apparatus were provided, perforated at its lowest edge, and having a long caoutchouc tube attached to this perforation at one end, and terminating at the other extremity in the usual form of enema nozzle. This apparatus acted well, and was cheap. He had used it for injecting both the rectum and vagina. When filling the apparatus the nozzle of the instrument must of course be held higher than the canister; and when using it after it is filled, and the nozzle inserted, then the canister is merely raised higher than the tube, and the liquid flows into the rectum or vagina without the jerking or *per saltum* motion of the common enema pump. A sufficient amount of elevation of the canister gave the fluid all the force that was necessary to send it into the rectum by mere gravitation. Valves in enema apparatus were expensive, and always going wrong. In this apparatus there were no valves.—*Edinburgh Medical Journal*, *Dec.* 1861, *p.* 595.

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## 124.—REMOVAL OF A FIBROUS TUMOUR FROM WITHIN THE ABDOMEN.

By I. Baker Brown, Esq., Senior Surgeon to the London Surgical Home.

[The patient was 34 years of age. She had had a tumour on the right side of the abdomen for seven years. This had been diagnosed as a fibrous tumour connected with the ovary so long ago as three years.]

*On examination*, Mr. Brown diagnosed a large fibrous tumour of the right ovary, perfectly moveable and devoid of adhesions. Her general health appearing good, Mr. Brown, on consultation with his colleagues, thought this was a case in which the whole mass might be removed by abdominal section. He, however, pointed out to the patient the great risk incurred, and advised her to consult with her friends, telling her that the tumour was not of a character that would rapidly kill her. Not until after several postponements, several consultations, and the patient

earnest wish to have the operation performed was the matter decided. Mr. Brown gave as his reason for operating :—1st. The perfect mobility of the tumour, showing it was devoid of adhesions. 2nd. That, although one could not be certain, still, from the fact that the tumour began on one side, he suspected that it was ovarian. 3rd. The rapid growth of the tumour. And, lastly, the patient's earnest desire to have it removed, she saying that, from its great size and weight, it was very inconvenient, and life was a burden to her in her present condition. To prepare her health she was ordered—℞. Tr. arnicæ, tr. ferri mur. āā ℥v., ter die sumend. To go out frequently in the open air, and to have warm baths twice a week, with generous diet, including porter.

June 12th. Getting stouter and stronger. Ordered :—℞. Hyd. bichl. gr. $\frac{1}{24}$, tr. cinchonæ ℥i., aquæ ad ℥i. M. ft. haust. ter die sd.

June 21st. The patient being placed under the influence of choroform, Mr. Brown prepared to operate. Before doing so, however, he stated that, although a tumour of the right ovary had been diagnosed, nothing certain could be known till an incision had been made. His first step would, therefore, be exploratory. Having made the median abdominal incision, the tumour was exposed; in doing which, there was a little hemorrhage from the latter being slightly cut. To the surprise of every one, when the tumour was examined, it was found not, as had been imagined, to implicate either ovary, but to grow from within the walls of the uterus. After consultation with Dr. Hall Davis, Mr. Harper, and other gentlemen present, it was resolved to proceed. Mr. Brown, therefore, secured the broad ligament and fallopian tube of each side by the callipers; then passing two double ligatures, through the tumour, as low down in the uterus as was judged would embrace its full extent, he firmly tied each half. All above the ligatures was cut off. A small fibrous growth outside the walls of that part of the uterus which was left was also tied. The stump of the uterus and the callipers were kept outside. Ten iron wire sutures were inserted, to close the edge of the wound, a bandage put on, and the patient placed in bed. During the operation, æther was substituted for chloroform, as the latter did not seem to agree with her.

*On examination of the tumour*, it was found to be a large so-called fibrous one, growing originally within the walls of the fundus of the uterus, the coats of which it had pushed up with it in its growth until at last they had burst. The tumour had grown considerably above this boundary, and its upper third was covered only by its own capsule. The connection of the tumour with the uterine walls was very intimate, and no doubt

this tumour was one of those so ably described by Dr. Paul Broca, of Paris, as hysteromas (*vide* 'Costello's Cyclopædia of Practical Surgery,' vol. iv., art. "Tumours," p. 469), which he distinguishes from fibrous as a tumour in which both the accidental tissue and the normal tissue of the uterus are united. He says, "These tumours are not purely fibrous, inasmuch as they contain elements analogous to those that form the muscular substance of the uterus, viz., the fibre cells of Kölliker. Their tissue, formed of a mixture of fibrous tissue and fibre cells, is, therefore, but a repetition of the structure of uterine tissue. Hitherto they have been met with only in the uterus itself, or in the adjacent organs."

On section, it was found that nearly one-third of the uterus had been taken away. There was also found two smaller tumours within that portion of the uterus which had been removed. Weight of the tumour, 7lbs. 5oz.

[She progressed favourably, but ultimately sank, and died eighteen days after the operation.]

*Post-mortem examination.*—July 9th, 8 p.m., twenty-seven hours after death.—The body generally very much emaciated. On examining the abdomen it was found that the pedicle had retracted within the abdominal walls.

The upper three-fourths of the wound had firmly healed; the edges of the lower part had separated about three inches, and to their inner surface the pedicle was firmly adherent. On opening the abdomen, the lower part of the intestines were found glued together, and to the pelvic fascia by very firm adhesions, evidently the result of peritonitis, though there were no signs of inflammation having taken place in the last few days. The adhesions between the bowels and the pelvic fascia were so firm as to require a knife to separate them. There was a large quantity of pus in the iliac vein, &c., the coats of which were thickened and contracted. There was rather more than one-third of the *uterus* left, and, on cutting through it, the vessels were found filled with pus.

The *heart* and *lungs* were sound, but paler than usual. The *liver*, *spleen*, and *kidneys* were also normal, but rather pale.

There was no pus in the *liver*, nor in any part of the body, except those above mentioned.

*Remarks.*—It has become a serious question in my mind since the termination of this case, whether it would not have been better to disregard the inconvenience and sufferings of the patient, of which she complained, and have allowed the tumour to go steadily growing, than to have attempted its removal. Even when found by the exploratory incision not to be a fibrous tumour of the ovary, as was so generally suspected, whether it

would not have been better to close up the wound without interfering with it. In several cases which I have since seen, very much resembling this one, I have decided not to interfere by operative measures, and it appears to me that the practical fact to be gained from it is the clear elucidation of this peculiar form of growth as contra-distinguished from those of the polypoid and fibroid tumours within the uterus.—*London Medical Review, Jan.* 1862, *p.* 320.

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## 125.—ON CAULIFLOWER EXCRESCENCE OF THE OS UTERI.

By Dr. J. Braxton Hicks, Assistant Obstetric Physician to Guy's Hospital.

[In all cases in which removal of the cervix, or such portions of the growth as are removable is effected, considerable benefit is at once visible.]

To drag the uterus down within range of the knife, is in many cases impossible, to say nothing about the risks of hemorrhage; to continue the ligature around the cervix for many days is a very severe, painful, and offensive operation; and both have been, doubtless, avoided as much as possible for this reason. Any plan, therefore, which will not require the uterus to be dragged down, which can be completed at once, and free from chance of hemorrhage, which is liable to occur after the knife or scissors, at the same time without any increase of danger to the patient, must commend itself to all. The chain-écraseur fulfils the latter conditions, but not the first; for it will not act otherwise than in a straight line with the shaft. In some cases the cervix can be brought within its scope, and in these it will be very safe and useful; but in those where it is impossible to bring down the uterus, it is useless.

To combat this difficulty, after many experiments of various kinds of material, I have found a rope made of annealed steel wire to approach nearly to the strength of the chain. The rope should be made of four or five smaller ropes, each composed of four wires of the size used for sutures. They should be twisted very loosely, but carefully; if too tightly, they are more likely to break. I have had a modification of the shaft of the screw-écraseur adapted to this rope, one much lighter and neater than those in ordinary use, which is needlessly heavy for all demands of obstetric surgery. If the hand cannot pass the rope round the tumour, I use two tubes like those of Gooch's double canula, from the end of each of which a loop of twine protrudes, the ends of which appear at the other end of the tube, to which they can be fastened. The wire rope is passed through these,

and both tubes are brought together in the centre of the rope, and introduced into the vagina. When they have reached as far up as desirable, the tubes are separated and carried round the tumour, like the ordinary double canula. When they have met at the opposite side, both ends of the rope are passed through the eye of the écraseur, which is pushed up as far as the level of the encircling rope; when this is accomplished, the latter is properly fastened. To release the loops of twine, untie at the base of each tube, and pull carefully by one end of the twine, keeping the tubes steady the while; the tubes are now to be withdrawn from the vagina. The screw of the instrument is now to be carefully worked, as in the chain kind.

This method is peculiarly applicable to *intra*-uterine polypi, from the flexibility of the wire. When long lengths of wire are required, the screw can be made to wind the rope on a drum. For small polypi, a wire rope of six threads will be found sufficient for every purpose. It is requisite that great care be used in the construction of the instrument, in order that the wire should not bear on any angle or edge; every part on which the strain rests should be smoothly rounded off. By means of such an instrument, the cervix can be cut through without dragging the uterus down.

To pronounce, therefore, the removal of the cervix under the condition above shown either a hazardous or a useless operations, as its removal was formerly designated, is wide of the true state of the case. We are indebted to chloroform for altering the whole aspect of operations, and those opinions expressed prior to its introduction can scarcely be quoted at the present time. No doubt, without its assistance, the pain in many operations might cause the operator to pause before he inflicted it without commensurate benefit; but pain being removed, the question is simply confined to the risk and the advantage.

It is under these circumstances that the exision of the cervix uteri, in this form of malignant disease, by the wire rope or chain écraseur is a comparatively easy and safe operation, and I would recommend in every case possible that this treatment be adopted, removing the cervix as high up as possible, to afford a better chance for complete extinction of this miserable disease.

The second point to which I would call attention is the use of styptics. The vitality of this growth is feeble; its cells are so delicate that their contents can easily be coagulable through the walls. Thus, a certain portion can always be killed by the application of tannic acid in powder. I have found that a saturated solution of alum, holding in suspension tannic acid, in the propertion of two drachms to the half pint of saturated solution, will, in the very soft forms, if applied every day,

reduce gradnally the more tender parts of the tumour; but it has less effect on those parts which approach healthy tissue in character; consequently, the nearer the lotion approaches the deeper structures, the less effect it will produce on the growth. Notwithstanding this, the effect of a styptic is always beneficial, because it checks both the sanious and serous discharges, and limits thereby the drain on the system. Sometimes a lotion of the above strength cannot be borne; in that case it answers very well if mixed with equal parts of water. I prefer tannic acid over other forms of tannin, inasmuch as we know the exact amount of tannin used, and, being insoluble, it remains behind on the growth and in the vagina, whereby its effects are prolonged. With regard to the other points of treatment, I need not enter upon them here, they being already well recognised, except to dwell upon the advantage the majority of cases experience by the use of iron and quina, either or both combined. The sustention of the system by these and other tonics, and by restraining the discharges, are almost invariably attended by marked beneficial results, I may say, in almost every case of malignant disease, and in the class under consideration particularly so.—*Guy's Hospital Reports, Vol.* vii. *p.* 251.

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## 126.—ON CAUTERISATION BY ELECTRIC HEAT IN THE TREATMENT OF CERTAIN DISEASES OF WOMEN.

By Robert Ellis, Esq.

Mr. Ellis, in a paper read before the Obstetrical Society of London, commenced by defining the action and effects of cauterisation by heat, and then described the instruments invented by him for producing this effect by the electric current. The cauteriser originally introduced by him in 1852 was of very simple construction. It consisted of a straight tube of silver. ten inches in length, containing a piece of stout copper wire clothed with an insulating substance. These formed the two poles of the apparatus, and metallic connexion was made between them at the upper end by a fine platinum wire, while at the lower they were in communication with the battery by two wires secured by a clip. Under the platinum wire was introduced a piece of porcelain, which acted as the cauteriser, being made white hot on the completion of the galvanic circuit. Up to the date of the introduction of this instrument only the heated wire had been used, and the author was the first to collect the heat by this means, and thus adapt it for practical use. For all cases in which a considerable surface required to be treated, this instrument was the most suitable. But for a

great majority of the cases coming under notice, the following was a more convenient form.

The cauteriser consisted of the ordinary handle used by dentists for destroying the pulp of carious teeth, with the button for making and breaking the galvanic connexion. But at its upper end two stout wires, of about seven inches in length, were attached, by being soldered into two silver sockets, which fitted in the ends of the wires issuing from the handle. By this means a tool twelve inches long was formed, capable of reaching the os uteri if necessary. The cauterising end was formed of a piece of platinum wire, shaped like an inverted Λ.

Hitherto, the great obstacle to the success of the electric cautery had been the great size, the cost, and the complicated form of the battery required. In the battery exhibited by Mr. Ellis, which was little larger than a glass tumbler, one cell was sufficient, and was sometimes so active as to melt the platinum wire. This battery consisted of a cylindrical glass jar, with a wide mouth fitted with a cap of gutta percha. Within was a cylindrical roll of amalgamated sheet zinc, a quarter of an inch thick, six inches deep, and about seven in circumference. Enclosed by it was a porous earthenware cylinder containing a roll of platinum coil immersed in strong nitric acid. As in all Grove's batteries, the outer cylinder contained dilute sulphuric acid. The peculiarity of the author's battery and the principal secret of its energy lay in the size and form of the platinum roll. Seen in section it presented a stellate arrangement. It was formed of a sheet of platinum folded upon itself, somewhat like a frill, and thus presented a very large negative surface.

The only expensive part of the instrument was the platinum, the value of which was about fifteen shillings. The rest of the instrument cost about two shillings and sixpence. By two stout copper wires (No. 15), made soft by heating to redness, and then plunging into cold water, the electric current was conveyed to the cauteriser, and the platinum wire was instantly heated to a glowing whiteness.

The diseases to the treatment of which the author considered this instrument likely to prove a valuable aid, were: obstinate ulcerations and congestions of the cervix uteri, resisting all other treatment for a long time; vascular growths from the os and canal of the cervix, which often give rise to tremendous hemorrhages; also especially the vascular tumours or caruncles of the female urethra; warty excrescences; and a peculiarly obstinate form of patchy inflammation, apparently of scattered glands on the mucous surface adjoining the meatus, and which frequently give rise to intolerable pain and pruritus. It may also

be useful in closing the minute holes left after the operation for recto- and vesico-vaginal fistulæ.

The author selected, as illustrations merely, three cases as typical of the benefit obtained from the use of the electric cautery :—

The first was a case of ulceration and hypertrophy of the cervix uteri. The patient, aged 37, married, sallow and unhealthy-looking, had suffered more than six miscarriages in succession, and was in a state of great exhaustion. The general symptoms and cachexia were of the well-known type. The cervix uteri was greatly enlarged, livid, and sanious. After some preliminary treatment, the electric cautery was applied on two occasions with very little pain. In a short time the whole aspect of the diseased surface was altered; and the patient recovered with little, if any, further interference.

The next case was one of vascular caruncle of the meatus—a disorder more than commonly rebellious to ordinary treatment. A lady in the country had suffered for many years with one of these growths, the extreme annoyance and distress of which at length induced her, after a fruitless attempt to obtain relief from the application of lunar caustic, by the advice of a medical practitioner, to apply to the author. The growth was cut through the base by a ligature drawn very tightly, and soon afterwards it was firmly touched with the cautery. The patient returned home well, and had continued now for some years without any sign of her old disorder returning.

The last case was one of intense pruritus of the external genitals, connected with the inflamed patches already alluded to. These patches were almost incurable by any ordinary treatment, and the disease had existed for fifteen years. The cautery was used to each of these spots in succession, and with the happiest effects; the disease gradually disappearing, and the mucous surface regaining its original healthy aspect.

In closing his paper the author remarked, that it could not be too much insisted upon that there was a peculiar benefit arising out of cauterisation by heat, which placed it in a different category from all other agencies of this kind, and which especially adapted it for obstetric use; and that was, the contractility following its use, and the remarkable modifications of vitality which it imposed on the structures treated by its means.

Mr. Ellis exhibited to the Society the battery and the cauteriser; the latter was at pleasure raised to a white heat so intense as to kindle gas, and it could be passed through several folds of paper without encountering the least resistance.—*British Med. Journal, Jan.* 4, 1862, *p.* 20.

## 127.—ON ULCERS OF THE OS AND CERVIX UTERI.

By Robert Ellis, Esq., Obstetric Surgeon to the Chelsea and Belgrave Dispensary.

The following table may prove useful, and exhibits the varieties of the simple ulcers of the cervix uteri in their order of frequency, with their diagnostic characters and outline of appropriate treatment:—

| Variety. | Characters. | Treatment. |
|---|---|---|
| 1. *Indolent Ulcer.* | Cervix hypertrophied, of a pale pink, and hard. Os patulous to a small extent. Ulcer of a rose red. Granulations large, flat, insensitive, and edge of the ulcer sharply defined. Discharge: mucus, with a little pus, and occasionally a drop of blood. | For a few times the caustic pencil. Afterwards, several applications of solution of nitrate of silver in strongest nitric acid. |
| 2. *Inflamed Ulcer.* | Cervix tender, hard, a little hypertrophied, hot, and red. Vagina hot and tender. Ulcer of a vivid red. Granulations small and bleeding. A livid red border round the ulcer. Discharge: a muco-pus, yellow and viscid, with frequently a drop of bright blood entangled in it. | Occasional leeching; hip-baths (warm); emollient injections. Then acid nitrate of mercury several times, succeeded by the solid lunar caustic, potassa fusa or cum calce. |
| 3. *Fungous Ulcer.* | Cervix soft, large, spongy to the touch. Os wide open, so as to admit the finger. Ulcer large, pale, studded with large and friable granulations. Discharge: a glairy, brownish mucus, frequently deep-tinged with blood. | At first the caustic pencil. Subsequently, nitric acid solution of nitrate of silver, or acid nitrate of mercury; electric or actual cautery. |
| 4. *Senile Ulcer.* | Cervix small, red, a little hard. Ulcer small, extremely sensitive, of a bright-red colour. Granulations very small, red, and irritable. Discharge: a thin muco-pus. | Potassa fusa, or strong nitric acid with nitrate of silver, once or twice, at *long intervals*. Then solid sulphate of copper in a pencil. |
| 5. *Diphtheritic Ulcer.* | Cervix of ordinary size; a little hot, dry, and tender. Ulcer covered in patches with a white membrane, adhering closely: irritable, and readily bleeding beneath. Discharge: a thin, acrid mucus, without pus, but occasionally tinged with blood. | At first, electric cautery, potassa cum calce, or acid nitrate of mercury, two or three times, at long intervals. *No nitrate of silver.* Subsequently, stimulant applications — tincture of iodine or sulphate of copper. |

I may be allowed to express my conviction that the more carefully these varieties of the uterine ulcer are studied, the greater will be found the practical value of their diagnosis, and the fewer the instances of failure in their treatment.—*Lancet*, *April* 12, 1862, *p.* 379.

## 128.—ON THE TREATMENT OF LARGE OVARIAN CYSTS AND TUMOURS.

By T. Spencer Wells, Esq., Surgeon to the Samaritan Hospital.

[Ovariotomy is a dangerous operation certainly, but its results are quite as favourable as those of many other capital operations. In successful cases the patient is restored to perfect health; and if only one ovary has been removed she may bear children afterwards.]

When ovariotomy is decided upon, I believe observance of the following rules will assist in securing a favourable result:—

1. The operation should be performed in an airy room, the temperature of which should not be below 70° Fahr., but need not be raised to a degree uncomfortable to either patient or surgeon.

2. The patient should be placed in the horizontal position, on a firm, narrow couch, opposite a good light, and be well covered by flannel everywhere except the abdomen and face.

3. She should be spared the fear and shock of the operation, by chloroform.

4. The incision should be made in the median line. It should not pass nearer than two inches to the symphysis pubis, and may commence just below the umbilicus. It may be extended upwards to the left of the umbilicus, and along the median line, as far as may be necessary to expose the tumour and separate adhesions. A large empty cyst may be removed through an incision three inches long; and an incision of five inches is amply sufficient for the removal of very large tumours, provided each cyst be withdrawn as it is emptied, or groups of small cysts be withdrawn unemptied one after another.

5. Any bleeding vessel in the abdominal wall should be secured before the peritoneum is divided.

6. When ascitic fluid surrounds an ovarian tumour, some of it may be allowed to escape; but the tumour should be pressed forward by an assistant to retain the fluid till the last as a protection to the intestines. Any adhesions found, whether there be ascitic fluid or not, between the cyst and abdominal wall, should be carefully separated by the hand while the cyst is full, great care being taken not to rupture any cyst. Adhesions to omentum or intestines are better left until the cyst is empty and the adherent viscera can be seen.

7. As soon as the tumour is freed from parietal adhesions, it should be tapped by a large syphon trochar. As the fluid escapes and the cyst becomes flaccid, it is either to be fixed by a hook and withdrawn, or drawn over the canula and tied over

it, to prevent any ovarian fluid from entering the peritone cavity.

8. As the cyst escapes, flannels wrung out of water at 9 are to be carefully wrapped round it to protect the peritone cavity. As secondary cysts are drawn to the opening, they a to be emptied, either by the trochar being passed on through t canula which is still tied within the first empty cyst; or b opening this cyst, passing one hand within it, and breakin down secondary cysts, while the other hand withdraws t tumour as it is emptied.

9. When there is a solid or semi-solid mass, so large that will not pass easily through the opening, this must be carefull enlarged to the necessary extent.

10. If, as the tumour is withdrawn, omentum, mesentery, intestine, are seen to be adherent to it, the adhesions must b carefully broken down with the fingers, or divided with t scalpel or scissors. When intestine is so firmly adherent tha it cannot be safely separated, the adhering portion of cy should be cut away, leaving it attaching to the intestin but removing the inner secreting lining membrane of the cyst.

11. Any portion of omentum separated, should be carefull held to see that no bleeding vessel is returned. Any portio which appears to be much altered from the natural condition, torn in the process of separation, should be cut away; and an bleeding vessel should be stopped by torsion, or by ligatur If by ligature, the ends should be brought out through part the wound. The ligature should not include any portion omentum—simply the bleeding vessels.

12. When the whole of the tumour has been withdrawn, will be found to be attached to one side of the uterus by pedicle which varies very much in length and breadth, an always contains large blood-vessels. This pedicle is first com pressed by the chain of an *écraseur*, or by a clamp, close to t junction of the pedicle and cyst. The tumour may then be c away, great care being taken so to arrange the flannels that n ovarian fluid can enter the peritoneal cavity.

13. The lips of the wound are then held apart, and the opp site ovary is to be examined. If diseased, it must be wit drawn, its pedicle secured, and the diseased organ cut away. healthy, it is left undisturbed. A careful examination is the made, to see if there be any bleeding vessel at the spots whe adhesions have been separated. Any such vessel may be s cured by torsion, or by the pressure of a needle passed across i Any blood or ovarian fluid in the abdomen or pelvis must b carefully removed by soft sponges wrung out of water at 96°.

14. The upper part of the wound is now to be closed by pas ing gilded harelip pins through the whole thickness of t

abdominal wall, at intervals of an inch. Each pin should perforate the skin about an inch, and the peritoneum about half an inch, from the incision on either side; so that when the two opposed surfaces were pressed together upon the pin, two layers of peritoneum are in contract with each other. These two layers adhere together very rapidly; prevent pus or other secretions of the wound from entering the peritoneal cavity; prevent adhesion of omentum or intestine to any part of the inner aspect of the wound not covered by peritoneum; and secure such firm union that a ventral hernia cannot occur after recovery.

15. The peduncle is next to be secured permanently. When the clamp does not drag on it too much, it may be left lying across the wound; but it will often be better to secure the pedicle permanently by ligature, and remove the clamp which had been used to secure it temporarily. Close below the clamp, the peduncle is transfixed by a needle which carries strong twine; and each ligature is so tied as to include a portion of peduncle of about a finger's breadth. One general ligature is then tied tightly around the whole as a security against bleeding from any vessel which may have been punctured. The smaller the portion included in each ligature, and the tighter it is tied, the more rapid is the subsequent process of separation. When the ligatures have been securely applied, the clamp is removed, and any superfluous portion of cyst is cut away; but care must be taken to leave enough beyond the ligature to prevent any danger of this slipping off.

16. When the peduncle is so long that the stump (or portion strangulated by the ligature) can be fixed outside the abdominal cavity, it is to be brought out at the lower part of the wound, and fixed there by a harelip pin, which is to be passed through it as well as through both edges of the wound. It is important that the ligatures should be on a level with the skin, and that the stump should be surrounded by dressing which separates the sloughing tissue from the raw surface. When the ligatures are fixed at the level of the peritoneum, raw surfaces surround the sloughing stump, and a sloughing condition of the wound, or putrid infection of the whole system, may possibly result.

17. When the peduncle is so short that the stump cannot be brought to the surface without great traction upon the uterus, the common practice has been to bring the ligature through the wound, and fix the free ends securely outside. In one case, they were carried through the inguinal canal beside the round ligament, and the abdominal wound was closed. In another, they were cut off short and left, the wound also being closed. It remains for further experience to determine which of these plans is to be preferred; or if only the vessels should be tied, instead of the whole thickness of the pedicle; or if acupressure

can be applied successfully; or if it would be safer to trust the *écraseur*.

18. In whatever manner the pedicle may be treated, th wound must be finally closed by a sufficient number of superfici wire sutures, to bring the opposite edges of skin into accura contact; and the wound may be brushed over with collodio as an additional protection against the fœtid sanies which ve soon begins to surround the decomposing stump.

19. The patient is then dried, and placed in a warm bed; hot linseed poultice, or a hot water cushion, is placed over th abdomen; and the whole is secured by a flannel belt, which kept in its place by a pair of thigh straps.

20. The principles of after-treatment are, to secure extren quiet, comfortable warmth, and perfect cleanliness to th patient; to relieve pain by warm and moist applications to th abdomen, and by opiate enemas; to give stimulants, when the are called for by failing pulse or other signs of exhaustion; relieve sickness, by ice or iced drinks; and to allow plai simple, but nourishing food. The catheter must be used eve six or eight hours, until the patient can move without pai The harelip pins are removed on the third day, unless tym panitic distension of the stomach or intestines endanger reopeni of the wound. In such circumstances, they may be left f some days longer. The superficial sutures may remain un union seems quite firm. When the pedicle is kept without, th dead stump and ligatures come away between the third an tenth days; but when the stump is left within the abdome the ligatures have remained for several weeks. The putr sanies which surrounds the stump must be carefully cleans away; and the wound and surrounding skin must be protect from it by means of greased lint or collodion. The dressi should be covered by a muslin bag containing dry charcoal, a powder of tar and gypsum, to prevent the appetite of th patient from being affected by any bad smell.

These details may appear to be needlessly minute; but I fe sure that it is upon the careful observance of little things that great deal of our success depends. I have more than once had t much reason to lament the neglect of some of the rules which have endeavoured to enforce.

Before concluding, I will lay before you the result of my ov personal experience in the radical cure of ovarian disease.

*a*. Two patients have been radically cured by simple tappin

*b*. Of five patients injected with iodine, three have remain without refilling for more than two years, and still remain we In the fourth, secondary cysts have since grown to a large siz and ovariotomy (which might have been performed before t injection) now appears too hazardous to recommend. In the fif

ase, the cyst has refilled after two injections; but the patient vill try it a third time, as the coexistence of a fibroid tumour f the uterus, and the general state of health, forbid ova- iotomy.

*c.* The cases in which I have punctured by the vagina and the ectum are still under observation; and I have not yet arrived t any further rule of practice than that before suggested.

*d.* In two patients, a free incision was made into a large mass f small cysts, in order to afford relief from pressure. The relief vas given, and life somewhat prolonged; but both patients died fter a few weeks.

*e.* In two cases, after making the first incision for ovariotomy, he operation was not proceeded with. In the first case, because he intestines were in front of and around the tumour. This atient suffered very little from the incision; and died four nonths afterwards from spontaneous rupture of a cyst into he peritoneal cavity. In the second case, adhesions were found o be very firm; and, as it had been arranged before the opera- ion with the patient and her friends that if firm adhesions vere found the operation should not be continued, I at once losed the wound. The patient had no bad symptoms. It vas about a year ago, and she has been tapped several times ince.

*f.* In twenty-six cases, I performed complete ovariotomy thirty, see former note). Of these twenty-six patients, sixteen ecovered perfectly. Fifteen (seventeen, see former note) are till alive, and in good health. One bore a child thirteen nonths after operation. Had the disease been allowed to run s natural course, or had simple tapping been the only surgical reatment adopted (none of the cases being suitable for iodine njection), I believe hardly one of these fifteen (seventeen) romen would have been alive now; and, if any had lived, hey would have been in the distressing state of all poor romen who suffer from large ovarian growths. Had I selected ny cases by refusing to operate where I was not very confident f success, I may say that scarcely a patient would have been ost. Some apparently desperate cases have recovered; and his has been the justification for operating in cases equally esperate. But it has led to several deaths which might have been elayed for some few weeks by thinking more of the reputation f surgery than of the prayers of the patient. It may be im- rudent to operate in desperate cases; but the surgeon, if he ail, is not so much blamed as when he operates upon a person tolerable health; and, if he succeed, the success is more rilliant. I think, however, we must look higher than this. We lust remember that it is our duty to relieve suffering and save fe, if we can; and, if we see a patient who must die soon—

whose few remaining days or weeks must be days of suffering and sorrow—who (fully understanding that the effort to relieve her may hasten on her end) is anxious to be relieved—who may possibly feel that even death would be a relief—and who calls upon a surgeon for help—I believe, and act up to my belief, that it is the bounden duty of the surgeon to do his best, unless he is convinced that no help he can afford can be of any avail. If the result be unhappy, as it often must be in such cases, he will bear the disappointment with fortitude, knowing that he has done what he believed to be the best for his patient. But when, almost contrary to his expectations, almost beyond his hopes, he finds a poor, weary, worn-out creature, fast sinking helplessly into the grave, restored in a few weeks to the full enjoyment of perfect health—she who was a burden to her family again the helpmate of her husband, the active mother of her children—the surgeon reaps that rich reward which you well know is so dear to all whose noble mission it is to relieve suffering—"the blessing of her who was ready to perish."—*British Medical Journal*, *Dec.* 28, 1861, *p.* 679.

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## 129.—ON OVARIOTOMY; THE MODE OF ITS PERFORMANCE, AND THE RESULTS OBTAINED AT THE LONDON SURGICAL HOME.

By I. B. Brown, Esq., Surgeon to the London Surgical Home

[The operation of ovariotomy is now a recognised and indeed a favourite operation—and the mortality from it has been shown to be less than after many other capital operations. The difficulty of an accurate diagnosis is often considerable, especially in cases complicated with cancer. Much, however, depends upon the history of the patient and her family, in arriving at a correct conclusion.]

Adhesions at the present time rarely prove an obstacle to the completion of the operation; they are either broken through with the hand, or divided with the knife or écraseur. When necessary to secure any by ligature, he advised the use of silver wires instead of thread or twine, allowing them to remain within the abdomen after cutting them short and close.

The author next fully described his mode of performing ovariotomy. He advises the pedicle to be enclosed in a clamp—the ordinary carpenter's callipers—as near to the tumour as possible, and kept externally. Its advantages are, that it can be removed in from one to three days; the wound heals quickly, and convalescence ensues in two or three weeks. If the pedicle proves to be very short, and pain is complained of, the clamp is to be removed in a few hours.

The preliminary measures to be adopted previous to the operation were then described, and their importance shown as bearing on the subsequent results. Amongst others, the author advised the observation of certain atmospheric conditions, and the avoidance of any proceeding when the atmosphere was low and heavy, with an absence or deficiency of ozone, and in that condition generally which we describe as depressing. If greater attention were paid to atmospheric changes, the author thought that there would be much less of gangrene, pyæmia, low fever, &c., so frequently witnessed after operations.

The after-treatment was also dwelt upon, and finally, the analysis of the cases. Of the latter, ovariotomy has been performed nineteen times by the author in the London Surgical Home up to the present time. Of these, thirteen have been recoveries, and six deaths. The details and special particulars of the whole of these cases were given in a series of tables. The ages varied from 18 to 56. Of the successful cases, eight were under the age of 30, and five above; whilst of the unsuccessful, one was 21, and five were 30 and upwards. The duration of the disease in the successful cases was from four months to six years; six were within the first year, or ten within two years, and three over the latter period. Nine were single, and four were married, and of the latter, two only had had children. Five had undergone tapping from one to three times. In the unsuccessful cases the duration of the disease was from two to ten years; four were married, three of whom had had families of from three to six children. Four of the fatal cases were tapped from one to six times. The general health was very good in five of the successful cases; in six it was but middling; in one it was shattered, and in another bad. In the unsuccessful cases four had bad health; one was in good health, and another had good health up to six weeks before the operation.

With respect to the operation, the incisions varied from three to seven inches long; in eleven it did not exceed five inches. The tumours were multilocular in eleven, and unilocular in two of the successful cases; in the unsuccessful they were multilocular in four, unilocular in one, and more or less solid in the sixth, containing hair, teeth, bones, &c., and no doubt congenital. Adhesions were found in all except four of the successful and one of the unsuccessful cases. These varied very much, being either very slight and easily broken down, or firm, strong, and unyielding; some were numerous in all directions, requiring to be cut or ligatured. Chloroform was given in all the cases; in two it had to be discontinued, but the patients suffered no pain; in two instances ether was substituted during the latter part of the operation. The pedicle was retained outside of the abdomen in all but two of the cases, the callipers being used for the

purpose of holding it. In all the operations performed lately, the wound had been closed by silver-wire sutures, simply twisted. Of the causes of death in the six fatal cases, in two instances it clearly arose directly from the operation itself: in the other four, conditions were found which chiefly brought about this result; in one case—that of the solid tumour—there was much old disease found; in another, the patient had been a hard drinker, was tapped five times, the belly being filled with forty-five pints of ascitic fluid, independently of the contents of the ovarian cyst, there was softening of the liver, and death occurred in six days. In the other two cases, diarrhœa carried off both—one in eight days, and the other in eighteen after the operation. In one of these, cancer of the duodenum was found, wholly unsuspected during life. The author concluded by stating that all these operations had been witnessed by gentlemen from various parts of the world, of Great Britain, and the metropolis, many of whom had watched the results from day to day and week to week.

Mr Spencer Wells said that the recommendation of the author of the paper to tie adhesions with silver-wire, to divide the adhesions, and then cut off the wire short, leaving a portion of dead tissue strangulated by the wire within the peritoneal cavity, was advice which he should not be disposed to follow. The material of which the ligature was composed could be of little importance. Either wire or twine would equally cause gangrene of the strangulated part, and there would be great danger that the whole system might be poisoned by absorption of the fetid matter of the decomposing slough. He felt convinced that if this practice were followed the mortality after ovariotomy would increase. He preferred a ligature of wire-rope, tightened by a screw, to the calliper-clamp; and he thought (after trying both seton-wire and harelip-pins for the closure of the wound) that harelip pins were generally to be preferred. The lateral pressure made by the cotton twisted round the pins fixed the two wounded surfaces more closely and securely than the wire. He differed entirely from the author in his preference to flannel over sponge in cases where it was necessary to cleanse the peritoneal cavity from blood or ovarian fluid. A soft, clean sponge did the work more effectually, and there was not the danger, as there was with flannel, of leaving portions of fine wool, or *fluff*, adhering to the peritoneum. He also thought that the author's advice would lead to a want of care in thoroughly cleansing the peritoneal cavity from ovarian fluid. In a recent case he had been led by some such advice, and by what he had heard of the practice of other surgeons, to leave some ovarian fluid in the cavity, thinking that as the intestines were exposed it might be more dangerous to sponge away the fluid than to

leave it; but the result had very much disappointed him. There was little else unfavourable about the case, yet the patient died, thirty hours after operation, of acute peritonitis, and the whole membrane was covered by a layer of the albuminous portion of the fluid. The peritoneum seemed to have acted as a dialyser, allowing the water to pass through, and leaving a coating of albumen on its surface. He (Mr. Wells) could hardly suppose that either inhalation of the vapour of turpentine after the operation, or the exhibition of arnica before it, could have any great influence upon the result. He had never used either, and his results were not less satisfactory than those of the author. It was singular that he had had exactly the same number of cases in the Samaritan Hospital as Mr. Brown had had in his Home —namely, 19. Mr. Brown's returns showed 13 recoveries and 6 deaths. His (Mr. Wells'), 11 recoveries and 8 deaths. His cases in private practice had been 15, of whom 8 recovered and 7 died. The total gave 34 cases, with 19 recoveries and 15 deaths. He trusted that Mr. Brown would also give the Society the result of his *whole* experience of ovariotomy. He (Mr. Wells) had not been able to do more than compare their first 20 cases; and it was singular that with these 20 the number of recoveries and deaths was directly reversed, for Mr. Brown had had 13 deaths and 7 recoveries; while he (Mr. Wells) had had 13 recoveries and 7 deaths. He was also of opinion that in some of the fatal cases brought before the Society this evening, the operation ought not to have been performed. The patients died of serious organic disease of the heart, or of some other important organ—cancer of the intestine, for example; or the uterus was so closely surrounded by adhering pelvic portions of the ovarian tumour that separation could not be effected. Such conditions could generally be detected during life, and ought, with rare exceptions, to lead the surgeon to refuse to operate. It often became our duty to operate in very unfavourable cases, and many of his own fatal cases had occurred under conditions so unfavourable that a good result could not fairly be expected; but the operation was decidedly contra-indicated in any case of serious organic disease of heart or lungs, or of malignant disease in any important organ.

Dr. Routh said he had seen a large number of cases of ovarian disease; he spoke, therefore, from experience. First, he believed we could never be certain beforehand on some of the most important points of diagnosis in ovarian disease. Extensive adhesions had been often diagnosed before operation, which were afterwards found to be limited or absent. In other cases their absence was predicted, while the operation revealed that they were very firm and numerous. The presence of coexisting ascites greatly increased the difficulty, so as to make a prelimi-

nary tapping necessary before ovarian disease could be made ou at all. Secondly, he had known some of the most eminent me in the diagnosis of ovarian disease mistake a large cyst of th kidney, extra-uterine pregnancy, and fibroid disease of th uterus, for ovarian dropsy. Thirdly, Mr. Wells objected to th expediency of operating in cases of cancer of the intestines, whic he stated was always to be made out before operation. In on of Mr. Brown's cases there was cancer of the duodenum with large ovarian cyst in front of it. How could such a disease b made out? It was simply impossible. In honesty he (Dr Routh) was bound to add that post-mortems often revealed th coexistence of other disease which not only could not have bee made out before operation, but which could not even have bee suspected. Fourthly, his impression was that the non-existenc of adhesions, and a perfectly healthy peritoneum, were no necessarily favourable to recovery. He had seen such case followed by severe peritonitis; while others, in which the peri toneum was almost entirely disorganized by extensive adhesions which needed very great force to tear them asunder, recovere without one bad symptom. Lastly, he thought that the practic of sponging out the contents of a cyst, if accidentally effuse during the operation, was better than leaving the fluid in th cavity of the peritoneum.—*Lancet, March* 22, 1862, *p.* 303.

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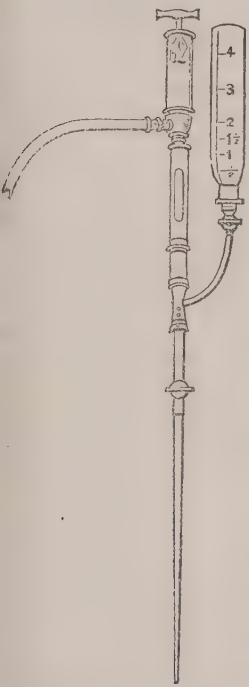
## 130.—TROCHAR-SYRINGE FOR INJECTING OVARIAN CYSTS.

The instrument shown in the accompanying sketch has bee contrived by Mr. Spencer Wells in order to enable the surgeo to empty large ovarian cysts, inject solution of iodine, an remove it again, if necessary, without any risk of admissio of air.

The trochar is fourteen inches long, and is covered by canula of gum elastic. The trochar is used in the ordinar manner; but as it is withdrawn, the canula is pushed on to th bottom of the cyst. A syringe, a stop-cock, and a graduate glass vessel for the iodine, may be so secured that every dro of ovarian fluid may be removed, and the entrance of air is pre vented during the escape of the fluid, the entrance of th iodine, and the withdrawal of any portion of the iodine Messrs. Weiss were the first to make this instrument.

A strong watery solution of iodine in solution of iodide o potassium appears to be preferable to an alcoholic solution The symptoms, in some fatal cases, have been those of alcoholi rather than of iodine poisoning. The solution Mr. Wells ha generally used has been a scruple of iodine and half a drachu of iodide of potassium in an ounce of water.

When a cyst holds from ten to twenty pints of fluid, from one to two ounces of this solution may be left in the cyst.




When a cyst holds from twenty to fifty pints of fluid, it would probably be better to inject eight, ten, or twelve ounces of the solution, so that the whole of the lining membrane may be acted on, and then to remove the greater portion of the solution.

These were the rules Mr. Wells laid down in a paper read at the last Annual Meeting of the British Medical Association. He said that the injection of iodine may be practised after tapping in cases when a cyst is single, or when one cyst is so far developed beyond others as to be the chief cause of distress. But it is dangerous, and must be useless, in cases of compound cysts or semi-solid tumours. It would seem to be advisable in cases of large single cysts, where simple tapping has proved useless, or where something forbids ovariotomy. Of five patients he injected, three remained without refilling for more than two years. Two still remain well. The third has been injected a second time, as the cyst began to refill about two years after the first injection. In the fourth case secondary cysts have since grown to a large size, and ovariotomy (which might have been performed before the injection) now appears too hazardous to recommend. In the fifth case, the cyst has refilled after two injections; but the patient will try it a third time, as the co-existence of a fibroid tumour of the uterus, and the general state of health, forbid ovariotomy.—*Med. Times and Gazette, Jan.* 4, 1862, *p.* 23.

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## 131.—ON VESICO-VAGINAL FISTULA.

By Dr. Marion Sims.

[The following is an abstract of a clinical lecture delivered at the Charité, at Paris, by request of M. Velpeau.]

The principal points, said Dr. Sims, in which my practice differs from that usually pursued at the present day, I may arrange as follows: 1st, as regards the position of the patient; 2nd, as concerns the manner in which I pare the edges of the fistula; and 3rd, the number of sutures I apply, and their distance from the lips of the wound.

In the commencement of my practice I was in the habit of placing my patients on their knees and elbows, the head being depressed and the pelvis raised. This posture I abandoned; it presented two great disadvantages—one in rendering the administration of chloroform impossible or nearly so, the other in fatiguing the operator by obliging him to remain standing. I now place my patient on her left side, her thighs flexed at a right angle with the pelvis, and maintain the upper part of the trunk in pronation, with the sternum towards the bed or table, on which there must be neither pillow nor cushion. By this position of the trunk the organs of respiration are not compressed, nor are the abdominal viscera pressed into the pelvis so as to displace the bladder or vagina. The speculum of which I make use has a special form; its blades curve towards each other so as nearly to meet at their distal extremity, an arrangement which prevents the possibility of injury to the vaginal coats. I divide the operation into three stages: 1st, the paring of the lips of the wound; 2nd, the passing of the ligatures; and, 3rd, the adjustment and torsion of the metallic sutures.

For the first stage four instruments are requisite—a pair of straight or curved scissors, a bistoury, a tenaculum, and a pair of forceps. With the tenaculum I seize the vaginal mucous membrane near one of the angles of the fistula, and with the bistoury slightly incise the *vaginal* mucous membrane. Raising this tissue with the tenaculum, I with a pair of straight scissors cut through the whole thickness of the edge of the wound *down to* the vesical mucous membrane, which it is all important to avoid wounding. I then proceed to attack a neighbouring portion, and so on until the whole surface is pared.

In the second stage I use a tenaculum, catch-forceps, and needles threaded with a double silk, having a loop at one extremity. Raising a lip of the wound with the tenaculum, and holding the needle by means of the forceps, I insert it into the tissues near an angle of the fistula, at about a third of an inch from the free margin of the wound, taking care when bringing it out not to include any of the vesical mucous membrane. Guiding the point of the needle on the tenaculum, I withdraw the forceps, and draw the point forwards by reapplying the instrument to that extremity. In reapplying the needle in order to complete the stitch, I commence in the same way from the

lip of the fistula, and cause the needle to emerge at a distance of a third of an inch from the wound. When one suture is thus complete, I hitch both ends into a notch made in a light piece of stick until required, and proceed. The needles, which are nearly straight and fine, should be introduced obliquely, for fear of wounding the vesical mucous membrane; and the stitches should be five, six, or even more in number. When all are *in situ*, I take the loop of the first, pass through it a silver wire, which I twist so as to be securely fastened, and by gentle traction substitute for each silk suture one of silver wire.

In the third stage, the operation is completed by the twisting of the silver threads or wires. For this purpose I have a small metallic conductor, furnished at its extremity with a square plate somewhat similar to the handle of the common grooved director. Into the fissure of this instrument I insert the two ends of one of the silver sutures, and give a gentle twist to draw the thread tight; which done, the ends are to be cut so as to leave a length of about two-thirds of an inch in connexion with the wound; these I bend back at a right angle, so that the force of the torsion may not act upon the lips of the fistula but on the wires only, and then complete their fastening by a few more twists with a forceps.

Before carrying back the patient to bed, a catheter must be introduced; this instrument is shaped like an **S**, and its vesical extremity is pierced with little pin-holes. The bladder should be first washed out with an injection of water, and the catheter left *in situ* and changed at least twice a day. The diet must be generous, and the administration of morphia in doses sufficient to produce constipation is indicated; a quarter of a grain being given twice, the first dose immediately after the operation and the second at night. The sutures may be removed on the eighth or ninth day, for this purpose the twisted end is drawn forward by the forceps until the part which has been united is brought to view, and *then only* is the silver wire to be divided. These details, added Dr. Sims, may seem minute and elaborate, but I believe them all important, more so than the skill of the surgeon or the brilliant manner in which he may achieve the operation.—*Lancet, Dec.* 7, 1861, *p.* 560.

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## 132.—INTRA-UTERINE FIBROUS POLYPUS; REMOVAL BY DR. HICKS' WIRE-ROPE ECRASEUR.

Under the care of Dr. J. Braxton Hicks, Guy's Hospital.

[The patient was a woman 43 years of age, who, until admission had been suffering from violent menorrhagia and profuse leucorrhœa. The uterus was enlarged, the os thin, and dis-

tended to the size of a crown-piece, the cervix obliterated, and a tumour just within, evidently causing the distension.]

A few days after entry, the patient was placed under the influence of chloroform, and removal was effected as follows:—The annealed steel rope was passed to the base of the polypus by the two canulæ, fitted with a wire loop passing up within each, which were then carried round the growth. The two ends of the rope were threaded through the eye of the shaft, and one fastened to the traversing hook, the other to the fixed pin. Having withdrawn the wire loop, the canulæ were removed, and the screw was employed. The section was completed in a minute. The instrument having been removed from the uterus, the polypus was found rolling free within its cavity, and its extraction was easily effected by means of a pair of small midwifery forceps. The operation was completed in less than ten minutes. The patient was able to leave the hospital in a week, and recovered rapidly without a bad symptom.—*Lancet, Feb.* 1, 1862, *p.* 121.

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## 133.—TREATMENT OF ENCYSTED TUMOUR OF THE LABIUM BY FREE INCISION.

Under the care of Mr. Tatum, at St. George's Hospital.

The diagnosis of encysted tumours of the labia is generally easy enough, although they have been mistaken at times for a femoral hernia. The long duration, moveable character, true cystic feel, and the absence of impulse on coughing, will readily lead to their true appreciation. The methods of treatment in ordinary use consist of simple puncture, the seton, injections of iodine, and dissecting out the cyst. All these we have seen employed with success; but the mode for which a preference seems to be shown is the last, one strongly advocated by Mr. Baker Brown in his work on the Surgical Diseases of Women. Dr. Oldham employs the seton at Guy's Hospital with, it is stated, invariable success. This is not the rule in the other hospitals; for a fistulous opening has been observed to follow, which necessitated subsequent dissecting away of the remains of the cyst.

On the 20th of January, a woman, aged about 35 years, was admitted into St. George's Hospital, with a tumour of the right labium, as large as an orange, which had been growing for the period of ten years. It was pendulous, hung down between the thighs, and resembled a hernia; but its true nature was quite apparent. It caused the patient considerable inconvenience, and much interfered not only with locomotion, but attention

to her ordinary avocations; it was at the same time an unsightly object.

On January 23rd, chloroform being administered, the cyst was punctured and emptied of fluid. The latter was of a dark chocolate-brown colour, of creamy consistence, and unpleasant odour, and no doubt contained, as Mr. Tatum supposed, degenerated blood (which may have impregnated a previously straw-coloured fluid), the result of some possible injury. In this respect it greatly resembled the contents of a hematocele in the male subject. The cyst was now slit up with a scalpel, as much of it being dissected away as could be got hold of, and the wound filled with lint, to heal up by suppurative action.

The patient is doing extremely well, and her radical cure is a question of a few weeks at furthest. She had not undergone any previous operation.—*Lancet, Feb.* 1, 1862, *p.* 121.

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## 134.—ENCYSTED TUMOUR OF THE LABIUM; ABLATION OF THE ENTIRE CYST.

Cases under the care of Mr. I. B. Brown and Mr. Hillman.

We think that most surgeons are agreed on the propriety of dissecting out the entire cyst, when circumstances will permit of it, for then the cure is complete. Mr. Brown urges the necessity of care being taken, in the after-dressing, to ensure a healthy granulating surface at every spot. This may be accomplished, he writes, either by dressings of dry lint, or by a cerate made of turpentine, oil, and resin cerate, equal parts; or by touching the surfaces with nitrate of silver.

A female, aged 33, was admitted into the Home, in November last, with a cyst in the left labium, of the size of a pigeon's egg, which had existed for six years. She was in perfect health, and her limbs were remarkably well developed. Under the influence of chloroform, on the 14th of November, Mr. Brown carefully dissected out the entire cyst. This was an operation of some delicacy, as its walls were extremely thin. The fluid contents were of a light-brown colour. Her recovery was perfect in the course of a few days. Mr. Brown's experience, in a large number of cases, is to the effect that nothing short of removal is of permanent benefit.

[The following is a case operated on by Mr. Hillman, at the Westminster Hospital.]

In the present instance, it was determined to dissect the cyst completely out, and this was an operation of some nicety, as the tumour was comparatively large (the size of an apple),

and its walls thin. The patient was a woman aged 28 years, who had been the subject of the cyst for several years. Under chloroform, on the 1st of October last, it was dissected away, but burst immediately before complete ablation was accomplished. The contents were a yellowish-green, watery fluid, with a most intolerable odour, and in bursting some of this fluid was ejected from the cyst to a considerable distance. Recovery was complete.—*Lancet, Feb.* 1, 1862, *p.* 121.

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## 135.—ON SUBSTANCES EXPELLED FROM THE GENERATIVE PASSAGES: THEIR NATURE AND DIAGNOSTIC SIGNIFICANCE.

By Dr. Graily Hewitt, Physician to the British Lying-in Hospital.

[From the substances, solid or otherwise, and said to have been expelled from the generative passages of women, we are often called upon to decide questions regarding the presence of pregnancy either present or past. An accurate conclusion is often very necessary, and no "off-hand" opinion ought to be given.]

In the very practical and valuable work of Dr. Montgomery, the substances which may be expelled from the generative passages are enumerated as follows:—"1, an early ovum; 2, a mole; 3, uterine hydatids; 4, the membrane produced in dysmenorrhœa or other conditions of uterine derangement; 5, membranous formations from the vagina." This does not, however, include all the substances which may present themselves to be examined and reported on; and the arrangement here adopted will be somewhat different from that of the author just alluded to.

A. In the first place, we shall consider those substances expelled or removed from the generative passages more or less resembling *flesh* in their outward form and appearance. By the term "flesh", or "fleshy" masses, they would be popularly designated; and it is therefore useful practically to group them together.

Now the "fleshy" substances may be found, on examination, to be composed of—1, an ovum cast off at an early period of its growth, or arrested in its development, and retained in the uterus, constituting what is popularly known as a *mole;* 2, the placenta, or a portion thereof, retained for a time, and subsequently expelled; 3, polypus of the uterus spontaneously detached and expelled; 4, fibrous tumours of the uterus similarly separated; or, 5, coagula of blood.

1. Is the substance examined *an early ovum?* In order to answer this question satisfactorily, the observer must be ac-

quainted with the structure of the ovum at an early period, and be able to recognise its several parts. If any part of the body or members of the fœtus be found in the mass expelled, there can, of course, be no doubt in the matter; we have to do with an abortion. When no part or parts of an embryo are to be found, we are obliged to search for other marks by which we may recognise the product in question as the result of conception. We proceed to search for one of the following structures: the decidua materna, or external envelope of the ovum; the decidua reflexa, internal to the latter; the chorionic villi; the umbilical cord; &c.

After soaking the specimen in water, it should be carefully examined in that fluid, a blunt probe and forceps only being at first used in manipulating. In ova which come away *en masse* (a rather rare occurrence) during the first three months or so of pregnancy, the external covering will be the *decidua materna;* and this membrane is recognised by its ragged, uneven appearance under water, by the presence of those bodies described first by Dr. Montgomery as "decidual cotyledons" on the external surface, by its pyriform shape, and by the fact that there are three openings—two superiorly, corresponding to the Fallopian tubes; and one inferiorly (which latter may, however, be closed), corresponding with the neck of the uterus. The decidua is further characterised by the smooth and velvety appearance of that surface of it which is internal; and by the fact that on this surface many minute openings are visible, giving the membranes a cribriform look. After the fourth month, this decidua is found thinner, and some of the characters just alluded to less marked. This decidua may come away by itself, torn or separated from the ovum, or filled with the degenerated structures of the ovum.

The *decidua reflexa* is a fibrous membrane, thinner than the decidua materna; and it encloses the ovum proper in great part. The most characteristic structure of the ovum is, however, the *chorion membrane*, and the *villi* which proceed from its external surface. The early ovum, separated from the decidual coverings, is a closed bag covered by little delicate processes, the villi of the chorion, giving to it a shaggy appearance. In a very early ovum, the villi are small and simple; but in a more advanced ovum—of two months, for example—each original villus has given off branches arranged on it somewhat like the roots of a tree. Later still, these villi are longer, and they are then found *on one side only* of the ovum; those on the other side, not participating in the development described, shrink and disappear for the most part. The presence of chorion villi may be considered quite conclusive as to the fact of impregnation and previous conception, whether the embryo be found or not; but it is a question whether the same degree of diagnostic value

attaches to the presence of the decidua materna; for it is an established fact that a *membrane* may be expelled from the uterus quite independently of conception, and possessing many of the characters of the decidua as above described. The difference between the two is that, in the decidua resulting from pregnancy, the decidual cotyledons are present; but not in the other. Such, at least, is the distinction at present recognised.

If a small sac were found, having attached at a point of its internal surface the remains of the umbilical cord, this would be conclusive on the question of impregnation. In the case of early ova expelled from the uterus, one of several results may be observed. The ovum enveloped in the decidua may come away entire; the decidua may remain behind for a time; and the chorion membrane, covered by its villi, and enclosing the embryo, be expelled by itself. The chorion and amnion may remain *in utero*, as well as the decidua; the embryo escaping from the uterus. In such a case, the membranes, fœtal and maternal, would be subsequently expelled.

*Moles.*—The various substances known under the designation of moles, and which are the products of conception, are for the most part the result of arrest of development, which may coexist with continuance of growth, of some portion of the ovum. The "fleshy mole", as it is termed, consists of an ovum between the membranes of which blood has been effused. The blood effused has coagulated, and the result is a mass, the parts of which are glued together and separated with difficulty. The villi of the chorion must be carefully sought for; and they ought in all cases to be found where there is no reason for suspecting that the ovum, with its chorionic investment, has previously escaped. The presence of organised membranes and chorion villi distinguishes the "fleshy mole" from simple clots of blood, and from other substances to be presently alluded to more particularly. It must be recollected that the chorion villi do not become developed so as to constitute what may be called the placenta, until about the fourth month of gestation. It is difficult to imagine that a fœtus which has lived until the placenta has been formed could undergo a process of complete absorption; but there are very numerous cases on record to show that degrees of development of the chorion villi short of the production of a placenta frequently coexist with entire absence of the embryo, which in such cases perishes at so early a period that its size is very inconsiderable, and it escapes detection.

There is another kind of true mole, the "hydatidiform" or "vesicular" mole, the description of which will come presently.

2. *The Placenta.*—The fleshy mass expelled may be a part or the whole of a "placenta." When a woman has been

elivered at or near the full time, and no placenta has come way, a fleshy-looking mass expelled a week or two after would all probability be the placenta; and in such a case the signs f previous delivery would be present, the history of pregnancy, c. The size, shape, &c., of the mass, and the presence of the mbilical cord, would externally indicate it to be the placenta. he expulsion of a retained placenta is, at least when the tention has existed for some time, usually preceded by an ffensive discharge; but the placenta has occasionally been ischarged apparently fresh, and without signs of decomposition.

Such cases are rarely open to much chance of misconception; but the nature of the case is not so obvious when the etus has been expelled at an earlier period of gestation. cases of abortion at the fourth or fifth month, the placenta may be retained for some time, its removal having been eglected or escaped attention at first. Cases are on record hich show that the placenta may be retained within the terus after abortion, for months and even years. An instance point is quoted by Montgomery from Morgagni.—(See Montomery, op. cit., p. 259.) More than one case of the kind has ndeed come under my own observation. Meanwhile, its presnce in the uterus has occasioned generally severe hemorhages. An early placenta would be of about the size of a geon's egg; later, it would be larger. If recognised as a lacenta, it would indicate a previous conception. The subances which might be mistaken for a placenta are, a fibrous mour spontaneously expelled, or a fibrous polypus similarly moved; and in both cases the symptoms, hemorrhages, &c., ight be somewhat alike. The structure of the fleshy mass ust then be carefully examined, to settle the point, if evisnce as to previous pregnancy be wanting, or if that which obtainable be open to suspicion. An early placenta is rounded, rved on one side, and smooth on the other. The presence of e umbilical cord attached to one side of it would be conclue; but this might be worn away or torn off close to the plaita. A section of the mass would, however, show vessels ranged in a peculiar manner, radiating from the centre of ne surface.

3 and 4. *Fibrous polypi* of the uterus and *fibroid tumours* e sometimes expelled spontaneously from the uterus. Exrnally, these bodies might be easily confounded with a plaita, the more especially as the preceding hemorrhages might considered evidence of abortion having occurred. Polypus the uterus and fibroid tumours frequently produce abor-n; and in certain cases abortion may occur in the first ace, and the expulsion of the polypus, which gave rise to

the abortion in the second. This sequence happened, as I had reason to know, in a case under the care of a gentleman in the country; and the polypus which came away was considered, until after it had been more carefully examined, to be the placenta. The structure of a polypus or of a fibrous tumour differs widely from that of the placenta, the former presenting a fibrous texture, generally dense, and sometimes very firm; but now and then, in the case of a polypus, more spongy and loose. The insertion of the umbilical cord would be, of course, wanting. Fibrous tumours of the uterus spontaneously expelled may be found to have become altered, degenerated into a *fatty mass*, as in a case related by myself in the *Transactions* of the Pathological Society, vol. xi. p. 173; or solidified by *calcareous matter*. Generally we find a previous history of "frequent and severe hemorrhages," when these uterine outgrowths have been expelled. The spontaneous expulsion here alluded to is not a frequent termination of their history.

5. *Coagula of blood* (blood-polypi, Kiwisch) retained within the uterus for some time, and expelled subsequently in a more or less firm condition, require to be discriminated from the bodies hitherto alluded to. Coagula may form within the uterine cavity in connexion with uterine hemorrhage of all kinds; after labour, in consequence of the presence of polypi, cancer of the uterus, profuse menstruation, &c. The uterine cavity is not as a rule, very tolerant of the presence of clots; and for this reason they do not generally remain there sufficiently long to have become firm and dense. They are frequently, as Scanzoni, remarks, connected with previous abortions. When the coagula are tolerably recent, they are easily broken down under pressure, or after soaking in water. Fibrous organised bodies are not to be broken up in this manner. When polypi of the uterus are present, coagula sometimes come away having a circular form like segments of rings. The polypus at the same time excites hemorrhage, and prevents the escape of the blood; and the rings in question are thus formed. Coagula not recent may present a tolerably firm, dense, greyish, fibrinous-looking surface. The want of organisation in the mass, the presence of blood-corpuscles, would assist in the diagnosis of the nature of the substance. The centre of the mass, moreover, generally exhibits a clot of a darker colour, comparatively unaltered, which was the original nucleus of the formation.

B. *Bodies more or less resembling "skin"* may be conveniently considered together under the designation of *membranous formations*. The skin-like substances in question may have their origin in the vagina or in the uterus.

1. *Exfoliations from the Vagina.*—Under certain circumstances, he lining membrane of the vagina separates in the form of thin ranslucent flakes, which sometimes come away in great quan-ities. Dr. Tyler Smith designates that condition of the vagina resent in such cases as "epithelial vaginitis." The flakes in uestion are composed of the scaly epithelium of the vagina, nd under the microscope exhibit the well-known appearances of his form of epithelium. It is necessary to place them in water, n order to render obvious the characters of these exfoliated roducts.

2. The *dysmenorrhœal membrane*, as it has been called, but oncerning the real nature of which the amount of our resent knowledge is by no means satisfactory, is described s an exfoliation of the lining membrane of the uterus—a sort f skin occasionally expelled from the uterus, independently f conception, after a catamenial period, exhibiting a certain egree of resemblance to the decidua lining the uterus during regnancy. The best observers for the most part agree in tating that this membrane is neither more nor less than the ucous membrane of the uterine cavity, hypertrophied and ast off. The formation of the membrane is supposed to be onnected with the catamenial nisus; and it has been called he dysmenorrhœal membrane, on account of its association ith those varieties of uterine pain known under the name f dysmenorrhœa. The membrane in question is smooth nternally, rough and slightly flocculent externally. When hrown off in a single piece, it presents three apertures cor-esponding to the apertures communicating with the uterine avity, and is of a pyramidal shape. It is generally expelled owards the end of the catamenial flow, which, as a rule, is ore profuse than usual. It is unlike the products of vagi-al exfoliations just alluded to, in being thicker. The dis-nction of this dysmenorrhœal membrane from the decidua of n early ovum might, under certain circumstances, be diffi-ult, as already stated; viz., when the supposed decidua is naccompanied by any part of the chorionic structure. The oncomitant circumstances will assist in the diagnosis: thus he "dysmenorrhœal membrane" is not expelled at one cata-enial period alone, but on successive occasions; whereas, in he case of an abortion, the same thing is not likely to recur, r, at all events, with the same marked periodicity.

3. *The Covering of the Early Ovum.*—Portions of the decidua erina, the decidua reflexa, the chorionic sac, &c., may come way in the form of membranous substances. It is unne-ssary here to repeat what has been already stated as to the iagnosis of the nature of these bodies.

C. *Vesicular Bodies.*—Little bladder-like substances, single or connected in series like beads, may be expelled from the uterus. These bodies were formerly considered to be hydatids of the uterus. They really result from certain alterations of the chorion villi, and they are always the result of conception. The embryo perishes at an early period, and the chorion villi continuing connected with the uterus maintain a slow growth, the *development* being arrested. The vesicular-like bodies are thus the result of dropsical swelling of the chorion villi. It appears that the period of pregnancy during which the chorion villi may take on this peculiar form of degenerative growth is limited, probably not later than the middle or end of the third month. If the embryo perish after the chorion villi have become pretty intimately connected with the decidua serotina, but before the placenta has become formed, while the villi are still allowed to retain a certain degree of connexion with the uterus, they may continue to grow; but *development* is arrested, and the bladder-like bodies are the result.

With the presence of the vesicular mole watery discharges are occasionally associated. The hydatidiform mole may attain a considerable size, remain several months in the uterus, a few of the bladders from time to time breaking and discharging fluid from the os uteri; and the mass may come away altogether, or clusters of the vesicles may be expelled at intervals.

Connected with this subject is an important practical question, which I have in another place thus attempted to answer: viz.: "*Can a portion of retained placenta take on the hydatidiform change?* The placenta belonging to a mature fœtus cannot, if healthy at the period of the birth of the child, become the seat of the hydatidiform change, the chorion villi having long since disappeared and become converted into blood-vessels. The only circumstances under which hydatidiform bodies might be subsequently expelled from the uterus, and give rise to the supposition that they arose from degeneration of a retained placenta, are, as I believe, the following:—Firstly, in case of double conception; when, one embryo having perished at an early period, the membranes thereto belonging have undergone the hydatidiform degeneration, and are not expelled from the uterus, together with the normal placenta. In illustration of this position, a case may be referred to which was published in the Lancet for 1846, vol. i., p. 430, in which a hydatidiform mass (in bulk about three pints) was expelled *together with* a normal placenta. In this case, it is most probable that there was a double conception; and if the remains of the diseased ovum had not been expelled *with* the normal placenta, but some weeks or months subsequently, the case would have come under the above category. A second possible ca-

is, that a portion of the chorion villi may become separated organically from the fœtus at an early period, and undergo the hydatidiform degeneration; whilst the remainder grow and nourish the fœtus up to the full time. . . . If the diseased portion were retained in the uterus, the supposition before alluded to might arise."—(*Obs. Trans.*, vol. i., p. 263.)

*True hydatids* may in very rare instances be expelled from the generative passages. They probably originate in the abdomen, bursting into this cavity from the liver; and they may possibly penetrate through the uterus, or into the vagina. True hydatids are closed sacs one within another; while the vesicular bodies resulting from chorionic transformation are arranged in a series like beads on a string with slender peduncles or intervening connecting portions. The well-known "hooklets" are usually found when the cysts are really of hydatid origin. I have met with a case in which death took place; several hydatid cysts were found in the abdomen, the pelvis, &c.; and, had life been prolonged, some of these might have burst into the vagina or uterus. In the case in question, the patient was a young unmarried woman.

D. *Factitious Bodies.*—Lastly, the observer must be cautioned as to the occurrence of cases in which, for a variety of reasons, women exhibit substances which they are desirous of leading the practitioner to believe have been expelled from the vagina. The careful examination of the bodies in question is, or should be, sufficient always to detect the fraud.—*British Med. Journal, Dec.* 14, 1861, *p.* 627.

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136.—*Instrument for the removal of Polypi of the Uterus.*—By Dr. Tyler Smith.—[This instrument was exhibited at a meeting of the Obstetrical Society of London.]

It consisted of a rod and winch with double canula, made sufficiently strong to carry wire, and bear tension enough to cut through the neck of a polypus at once. In his opinion the best practice was to remove polypi from the uterine cavity, and not to wait until they had been extended into the vagina. Many of the deaths in cases of polypus arose from delay in their removal, causing excessive and long-continued hemorrhage, or the poisonous effects of the decomposing mass, when the ordinary ligature was used, and many days occupied in cutting through the polypus. With this instrument and a single or stranded iron or copper wire, it was generally possible to remove a polypus in a few minutes, whenever the os was sufficiently open to admit the canula.—*Medical Times and Gazette, Dec.* 14, 1861, *p.* 621.

## 137.—CASE OF UTERINE HYDATIDS.

By Thomas Tweedale, Esq., Uppermill, Manchester.

On August 24th last, I was called upon to attend Mrs. ——, aged 33, in her third confinement. On arrival, I found her almost pulseless, from excessive hemorrhage. On enquiry I ascertained that she had suffered from hemorrhage for twenty-five weeks previously, but not to such an extent as to require medical assistance.

Externally the uterus seemed very much distended, in fact the woman was under the impression that she would have twins, and had an idea that she could feel their movements. On making an examination per vaginam, I found the os uteri dilated to the size of half-a-crown piece, but could not distinguish any presentation. Fearing danger from the continued hemorrhage, I at once introduced my hand into the uterus, for the purpose of turning the fœtus if necessary, and was surprised to find its contents break down under very slight pressure.

Having satisfied myself there was no fœtus, I withdrew a portion of the contents, and found them to be hydatid cysts, averaging the size of full-grown grapes. I then re-introduced my hand into the uterus, and removed the whole of them, weighing between five and six pounds. The uterus at once contracted, and the hemorrhage ceased. In a few hours the mammary glands performed their functions, and the case proceeded as one of natural labour.

No unfavourable symptoms setting in, the woman rapidly recovered, and when I last saw her she was following her usual employment.—*Medical Times and Gazette, Nov.* 16, 1861, *p.* 513.

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138.—*Tuberculosis and Uterine Disease.*—The following case is of interest as showing the connexion which may exist between certain diseases. A woman aged 27, began to suffer from dysmenorrhœa after her fourth confinement. The courses were tardy and painful, and she also suffered from leucorrhœa, disturbed digestion, oppression in the stomach, flatulence, emaciation, loss of power, vertigo, palpitations of the heart, &c. At last symptoms of phthisis ensued,—viz., a distressing cough, hæmoptysis, sweat in the night, diarrhœa, and fever in the evening. There was a dull percussion sound below the right clavicle, and the respiratory murmur was indistinctly heard. On examining the womb the collum uteri appeared swollen, the two labia of the os were quite ulcerated, and suppurated freely while mucus flowed away from the cavity of the organ. The cervix uteri was then cauterised twice a-week, whereby a cure o

the abnormal secretion and ulceration was brought about. At the same time the digestion improved, the patient gained strength and flesh, the fever disappeared, the percussion sound lost its dulness, and the pain below the clavicle was also gone, so that the patient could be discharged from the hospital as well as could be expected.—*Medical Times and Gazette, Nov.* 30, 1861, p. 564.

## 139.—ON NÆVUS.

By Thomas Bryant, Esq., Assistant Surgeon to Guy's Hospital.

[Mr. Bryant divides nævi into three classes, cutaneous, subcutaneous, and mixed.]

The distinction between these three classes of nævi is practically of great value, as the treatment must be modified according to each form.

In the purely cutaneous nævus alone are caustics of any value. Nitric acid, or potassa fusa, carefully and freely applied, in such cases are often sufficient to obtain a cure; but if the nævus involves the deeper subcutaneous tissues, it cannot be expected that any benefit will accrue from their application. The acid or caustic acts only upon the part to which it is applied, and as it can only be applied to the surface, it is only upon that that any influence can be exerted. As a consequence, it should be remembered, even in such a simple case as nævus, that a correct practice can be only based upon a correct diagnosis, and that if the diagnosis of this purely cutaneous nævus is mistaken, the practice based upon it is sure to fail.

In the simple and uncomplicated subcutaneous nævus the application of external remedies are palpably inexpedient; and it is in these that the value of the subcutaneous ligature, or of the injection of the perchloride of iron, is often most admirably illustrated. The former I regard as the most certain and most rapid method of cure; the treatment by injection is always uncertain, and not to be relied upon, although in exceptional instances it acts very favorably. It is a practice which I now rarely adopt, as I find that other treatment is more certain in its effects and more rapid.

When a subcutaneous nævus can be isolated, the subcutaneous ligature should be selected; and when this isolation cannot be carried out, the treatment by seton is most valuable. A few threads passed through different portions of the growth, and left in for a few days (that is, sufficiently long to excite adhesive inflammation), will generally prove sufficient to destroy the nævus; the effused fibrin, by its subsequent contraction, strangulating the minute vessels, and thus allowing the degeneration of the vascular growth.

If one application of many setons fails to effect a cure, a second should be attempted, and a third or fourth should not prove discouraging. Perseverance will generally be followed by success; but a repetition of their application should not be carried out until the immediate effects of the former have passed away.

In the mixed or third variety of nævus, that is, where both the skin and subcutaneous tissue are involved, the application of ligatures to the whole, or excision, where it can be carried out, is the best treatment.

The form of ligature should be adapted to the size and situation of the nævus; it may be tied in one, two, three, or more portions; pins may be used, or otherwise, according to the fancy of the operator or necessities of the case; the object to be attained is thoroughly and completely to strangulate the growth, and if this is done it is immaterial as to the means—efficiency is the only test.

When the nævus can be isolated, as in those forms which are completely pendulous, excision is the simplest and most efficient remedy; the base may be fixed by a clamp, and on its central side ligatures may be passed so as to include the whole of the base of the tumour; on its distal side excision may be performed. One clean incision being made along the side of the metallic clamp, the actual cautery may then be used to prevent all chance of hemorrhage if any portion of the divided nævus should have been left, and the clamp may then be removed; the ligatures, as previously applied, will maintain the edges of the wound together, and a lineal cicatrix will alone remain. This practice has proved successful in many instances, and when it can be repeated it should be carried out.

In cases in which, from their position, or from their diffused nature, neither form of practice as just indicated can be employed, the treatment by seton is most valuable. It is a practice which of late years has fallen somewhat into disrepute; why, I know not, but from considerable experience in such a practice I can most conscientiously advise its reintroduction.

It must not, however, be forgotten that these nævi have a natural tendency to degenerate and to undergo a cure; their rapidity of development and situation should alone lead us to adopt any surgical treatment. If situated in any portion of the body where disfigurement is of no consequence, and the nævus shows no disposition to enlarge, it may with safety be left alone, for it is tolerably certain that as years advance it will degenerate and become a simple and harmless tumour.—*Guy's Hospital Reports, Vol.* vi. 1860, *p.* 70.

## 140.—ON THE TREATMENT OF NÆVUS.

By Fred. Le Gros Clark, Esq., Surgeon to St. Thomas's Hospital.

1. The simplest form of the disease, and that with which we are most conversant from its frequency, is the skin nævus. This is usually congenital, though it may be so small as not to attract attention until its growth leads the mother to seek advice. This form of the morbid growth is generally raised a little above the level of the healthy skin, and of a bright scarlet hue. This is to be distinguished from the "claret marks," which are permanent stains of the skin, and have no tendency to extend. Pressure, in the true skin nævus, disperses the blood for a moment, but the colour immediately reappears when the pressure is removed. 2. The subcutaneous nævus has its seat in the areolar tissue immediately beneath the skin, and presents a swelling more or less elevated, and of a doughy feel, subsiding also under pressure, but rendered tense and often blue, when the little patient cries and struggles. 3. These two forms may be combined originally, more frequently, however, the subcutaneous nævus subsequently involves the skin, as it spreads in different directions. There does not, however, appear to be the same tendency on the part of the cutaneous nævus to involve secondarily the areolar tissue: many of these skin affections will radiate over a large surface, without dipping into the deeper textures at all. 4. The mucous surface is subject to conditions similar to those affecting the skin; or, I should rather say, such parts as are near to the orifices, as the lips, tongue, vagina: other textures, as muscles, are also occasionally the seat of this vascular disease; but such tumours are usually supplied by larger vessels, and pulsate like aneurisms. These supplying arteries are convoluted and elongated, and thus aid in forming part of the tumour. Of the same character are, apparently, those tumours which affect, for instance, the orbit, known by the rather indefinite title of "aneurism by anastomosis."

The treatment of nævus necessarily varies according to the form of the disease and the texture in which it resides. I will speak briefly of each, stating the results of my own observation and experience.

First, of *Cutaneous Nævus.* I think there is scarcely any part of the skin which I have not seen affected with this common form of the disease. It is probably most frequent on the head and face; but I have repeatedly seen it on the extremities, and on all parts of the trunk, as well as on the female genital organs; the interior of the mouth and the tongue are also sometimes the seat of this superficial form of vascular growth. The only effective treatment is simple destruction of the diseased tissue; pres-

sure or any other modified method is, in my experience, useless; the skin must be destroyed. For this purpose I employ either strong nitric acid or caustic potash; I give the preference to the former, as being more under control; but I occasionally use the latter, when I want to produce a deeper eschar. In applying the nitric acid I use a small glass rod, and provide myself with a piece of blotting paper, wherewith to absorb any that is superfluous. The acid should be applied about one line beyond the diseased patch, and should be allowed to remain on the part, or be re-applied until the loss of colour, and change to a yellowish hue, assures you that the destruction is complete. A piece of adhesive plaster is the only necessary dressing; and the eschar should be allowed to separate spontaneously. When the potassa fusa is rubbed on a nævus, it is well to be provided with some vinegar, to neutralize its action when you are satisfied that enough is done.

The *Subcutaneous Nævus* may be treated in various ways; and I have repeatedly employed acupuncture, seton, injection, and ligature, besides another method to which I generally give a preference, and of which I will speak presently. Acupuncture is both tedious and uncertain. A broad, lance-shaped needle should be employed, and the healthy skin perforated at least half-an-inch from the swelling; by repeated thrusts, radiating in different directions, the diseased growth may be thus perforated and cut up; and the benefit to be anticipated is due, in part to the pressure of the extravasated blood, and partly to inflammation. I cannot, however, recommend this method to you, as it is uncertain, and may even irritate the growth, and the bleeding is often very troublesome, even from a small puncture. But, with the addition of a caustic probe, I have found this method invaluable. The proceeding, which was suggested to me by the risk attending injection, is this:—I melt some nitrate of silver in a watch-glass, and coat the extremity of a fine probe with it. After cutting up the tumour and removing the lance-shaped needle, I immediately introduce the caustic probe along the same track, and moving its point about, thus dissolve the caustic in the interior of the tumour. The advantages are these. You are able to apply and limit your caustic solution to the diseased texture, whereas an injected irritant will often diffuse itself into the healthy areolar tissue. There is no destruction of skin; and the track of the needle being cauterised, there is no risk of bleeding. Moreover, a track is secured for the exit of pus which subsequently forms; and the disease is cured by this inflammatory destruction of its texture. A large subcutaneous nævus may be treated in this way in segments.

Of injection I can speak favourably, except for the risk just alluded to; diluted iodine, or a solution of alum, answer the

urpose: but I have entirely neglected this method since I have mployed the caustic probe. Vaccination is sometimes effective, ut uncertain, and sometimes attended by much inflammation. t is applicable when the nævus is cellular and extensive. A eton answers the purpose in some instances, but I do not ecommend it, on account of the continual irritation it produces, nd the troublesome bleeding which may follow its introduction. Extirpation of a superficial nævus with the knife I have never mployed, for the obvious reason that the attendant hemorrhage ould be dangerous; but this method of removal seems to be he only suitable one when the disease is developed in a muscle.

Many instances have occurred to me where it has been equisite to apply various modes of treatment in the same case. s, for example, where the labia and vagina were the seat of he disease, for the cure of which both the ligature and nitric cid were required; or, again, as in the case already referred o, where the lower eyelid was involved both superficially and ubcutaneously, and in which nitric acid and the caustic robe were used effectually, without being followed by any ctropium.

The employment of ligature, in my experience, is both safe nd certain; but it usually involves the loss of skin, and leaves consequent cicatrix. I give preference to this mode of opera- ng where the scalp is the seat of the disease, and, as is usual ere, both skin and subcutaneous areolar tissue are involved. he best mode of strangulating a small nævus is to transfix its ase with two hare-lip pins, passed through at right angles to ach other, and then encircle them with a ligature. I generally uncture the swelling before finally tying the knot, to allow the scape of the expressed serum. The points of the pins should e then cut off, and strips of adhesive plaister be interposed etween them and the skin. Where the diseased growth is very rge and pulsating it may be desirable first to dissect up flaps f integument, after making a crucial incision across it; or it ay be requisite to tie such tumour with divided ligatures, assing them subcutaneously around it, and including separate gments in different nooses. This is not difficult, and is an ffectual mode of dealing with large subcutaneous nævi; but in eating smaller ones, with some exceptions, I now generally nploy the caustic probe.

I have never been tempted to tie the supplying arteries of ese tumours, and I cannot learn that the experience of others very encouraging in this respect. Nor has it occurred to me have a case requiring ligature of a main arterial trunk. This peration has succeeded in some instances, but entirely failed in hers.

There is one trivial form of this disease, for such it appears

to be, which I have been frequently requested to treat in young persons who are beginning to pay some attention to personal appearance. I mean small crimson spots on the cheeks or nose, where they are very unsightly, and have a tendency to spread. If you cannot discover the supplying vessel in these cases, the best way is to touch the spot with nitric acid. But in some instances you may notice the crimson artery creeping along to its destination. Then you may cut across this vessel, and immediately touch the spot with nitrate of silver. When the tongue is the seat of the disease, nitric acid or caustic potash should be used; I prefer the former. I have seen a few of these cases, and have found them very troublesome, sometimes requiring a ligature. The tongue should be carefully dried before applying the acid, and the nitrate of silver may subsequently be rubbed freely over the surface, whilst still moist with the acid.

The most singularly diffused exemplification of this disease with which I have met was in an out-patient at the hospital some years since, whom I unfortunately lost sight of soon after I first saw him. In this case the limbs and trunk presented a multitude of the scarlet skin nævus, in patches varying in size from a fourpenny piece to a half-a-crown. There must have been scores of them.

I would remark, in conclusion, that in treating subcutaneous nævus, as I have described, with the caustic probe, I encourage suppuration by the application of water-dressing or a bread poultice. The discharge, as I have said, finds its way out along the track of the needle; occasionally, though but rarely, another point of exit is formed. The swelling is slow in subsiding, but the cure is manifested by the altered density of the texture, the loss of any blue tinge the skin may have presented, and the absence of any change in size when the child cries. I have now treated a great many cases in this way, without any untoward occurrence, or the necessity of having recourse to any other expedient to complete the cure.—*Med. Times and Gazette, Jan.* 25, 1862, *p.* 76.

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## 141.—NÆVUS IN THE CENTRE OF THE FOREHEAD OF AN INFANT: TREATMENT BY EXCISION.

Under the care of Mr. Gay, at St. George's Hospital.

An infant, five months old, was brought into the operating-room of this institution on Thursday, the 24th ult., having a nævus in the centre of the forehead, just below the limits of the hair follicles. It was of the size of a small nut, and dipped from the surface of the skin, above which it was prominent as a deep-red vascular growth, through the integument quite to the

pericranium. As the mother had observed a steady increase in the growth, Mr. Gay removed it, and that by excision, in the following manner: — He first passed a hare-lip needle through the skin, below the base of the nævus, so that the ends emerged about one-eighth of an inch on each side beyond the extreme edge of the growth. He then removed the whole of the nævus by incision close to its margin, and instantly brought the sides of the wound together by means of a figure-of-8 ligature over the needle, as in cases of hare-lip. As the needle arrested only the bleeding in its immediate neighbourhood, it was necessary to put in two more, one on either side of the first, and to close the wound by ligatures as before. This *completely* stopped the hemorrhage; when the whole was dressed with lint soaked in cold water. A very few drops of blood were lost, the needles were taken away on the fourth day, and the child presented at the hospital on the following Thursday with simply a linear mark indicating the seat of operation. The wound had perfectly healed.

The nævus, on subsequent examination, was found to occupy the cutis in its entire depth, and to make it somewhat thicker than the surrounding healthy skin. It was covered by healthy epidermis, which could be peeled off after maceration; it consequently possessed the normal function of separating healthy epithelium, which in its turn became healthy epidermis. The næval tissue, although defined and distinct in every respect from the cutis in which it was imbedded, could not be separated from it. The one passed into the other, as though but a local modification of its histological elements. These elements consisted, after maceration, in a considerable quantity of yellow, elastic, wavy fibre, convoluted as well as straight capillaries (*l*), the *débris* of blood-corpuscles, and other granular matter.

Modern surgery approves of the ligature as a mean of extirpating these growths. Vaccination is seldom successful, and, in Mr. Gay's experience, the other methods of local irritation for the purpose of setting up adhesive inflammation in the tissue have been equally futile. The ligature has been preferred, because excision has been supposed to be dangerous, owing to the hemorrhage attending it. But the ligature is open to two very decided objections. The first is, that the strangulation of these growths, whether the skin is included or not, is followed by severe pain, often constitutional irritation and fever, and (when the growth has been on the head or in the neighbourhood of nervous centres) sometimes death, preceded by convulsions and other symptoms denoting injury to the nervous system. Mr. Gay has seen this happen, and appeals to surgeons for like experience. The second objection arises from the large and tardily-healing wound and resulting

cicatrix. And it must be remembered that cicatrices grow, and therefore, on the more exposed parts of the body, this is a very considerable evil. As to extirpation, Mr. Skey says that, "unless wide of the disease, it is necessarily attended with copious hemorrhage, and its objection is obvious." Mr. Fergusson objects "on account of the size of the wound and consequent scar;" and "besides," adds this eminent surgeon, "there are few instances in which it is admissible." Nélaton also objects, on account of the loss of substance involved, the size of the cicatrix, and the hemorrhage, owing to which, he says, "plusieurs enfans ont même succombé entre les mains des operateurs." (Elemens de Pathologie Chirurgicale.) The American surgeons, Drs. Physutt, Reese, Mott, and Jamieson, have extirpated them; but they tie any bleeding vessels, and fill up the wound with charpie, so that it is left to granulate. The size of the cicatrices is a grave objection to this mode of treatment subsequent to the operation.

There can be no reasonable doubt that a clean-cut wound is better in every respect than the same extent of wound made by ligature, to say nothing of the process of sloughing, and the chance of having to repeat the ligature to some part of the growth in case of the first proving partially abortive, as it sometimes does; and that the only remaining objection to excision is the hemorrhage. In both a loss of tissue is unavoidable.

To avoid the hemorrhage, and at the same time all but the smallest and most inconsiderable scar, Mr. Gay is now in the habit of treating these cases in the way just described, and has found no inconvenience to follow its adoption. The number of needles by which the tissues below the base of the nævus are to be transfixed must depend upon the size of the growth; and should hemorrhage from any point follow the closing of the wound upon the needles already introduced, one or more may be added afterwards, and thus the blood can be completely stanched. The needles should be inserted at a right angle to the long axis of the tumour, for obvious reasons, and the incisions should come to a point at the extremities. The skin should be cut with an exceedingly sharp knife, and the cut edges be clean. In this way *immediate union of the edges* will be secured, and scarcely a mark will remain.

This mode of treatment is most suitable for infants, before the nævus has extended itself by growth, and whilst the skin is elastic, and admits of adaptation by stretching. Perhaps the larger nævi of the scalp may not admit of it. As yet Mr. Gay has had slight experience to warrant his recommending it. He however, strongly recommends the extension of the excision method, as far as it can be practically carried; and for

the larger nævi, or those situated in skin that is not sufficiently extensile to admit of filling up the wound made in their removal, some modification might be suggested that will meet the difficulty, and give in the end the same advantages over the ligature.—*Lancet, Dec.* 14, 1861, *p.* 568.

## 142.—ON THE REMOVAL OF NÆVI.

By J. C. Christophers, Esq., St. John's Wood.

[A variety of operations have been proposed and adopted for the removal of nævi occurring in situations where hemorrhage is difficult to control and where disfigurement is sedulously to be avoided. Few achieve all that should be sought.]

The operation is very simple, requiring only a needle and some waxed silk. It is easily and quickly performed as follows. A double ligature is passed underneath the centre of the nævus. Divide the ligature; pass one half of it through the skin above the part required to be removed; pass the other half through the skin below the part required to be removed. Tightly tie the two ends of the loop including the inferior half of the nævus; tightly tie the two ends of the loop including the superior half of the tumour. The four ends of the ligature are now tightly and alternately tied the one to the other, and the operation is completed, the whole nævus being effectually strangulated by being entirely enclosed in a double circle by the ligature both from within and without.

The advantages claimed for this operation are—that the risk of hemorrhage is avoided by it, and that neither needles nor apparatus remain to annoy the infant, the mother, or the nurse; that the pain entailed by its performance is not severe, that it appears to cease with the operation, and that further surgical interference is not needed to perfect the cure; that it leaves less deformity or scar than the operations by excision, needles, or caustics, as the sound skin surrounding the nævus is made by the tightened ligature to take its place, and is there held as by two points of suture; that it is applicable to all cases; than it can be used in situations where other methods cannot be applied; and that it is suited to nævi of all forms, whether they be prominent or flat, superficial or deep, extensive or circumscribed. —*Lancet, April* 5, 1862, *p.* 366.

## 143.—ON THE STATE OF THE PUPIL IN HYDROCEPHALUS.

By Dr. S. Wilks, Assistant-Surgeon to Guy's Hospital.

The state of the *pupil* was remarkable in being contracted, for dilatation is the rule, especially if there be much effusion in

the ventricles. It is highly probable that the condition of the pupils depends upon accidental circumstances, as, for example, what part of the brain is especially affected in any individual case. The rule in hydrocephalus is a sluggishness of the pupil at the early period of the disease, and a dilatation towards the close; how far this depends on implication of those parts of the brain whence the optic nerve has it source, or how far on affection of the nerve itself from surrounding inflammation, is difficult to say. Contraction of pupil in cerebral affection is generally, we believe, observed in those very severe forms of apoplexy where a large quantity of blood is poured out into the ventricles and runs down to the base; also in those cases where a sanguineous effusion has occurred in the substance of the pons varolii. It is clear from this, that the pupils are variously affected as different parts of the brain are involved. As showing how slight a matter will influence the size of the pupils, we may mention a case which we witnessed some years ago; it was that of a man who had long been bedridden with softening of the brain and large ventricular effusion; on our first visit to him in this state, we made a note of the fact of one pupil being larger than the other; on a second visit, the pupil which had been the smaller was now the larger, and *vice versâ*. It was then remarked that he was lying on different sides on these two several occasions, and that it was in each instance on the lower side that the pupil was dilated. We requested that before our next visit he should be placed on the side on which he lay when first seen; this was done, and it was then found that the change had again occurred, and the same pupil was dilated as in the first instance. So also on subsequent occasions, which enabled us to prove that the gravity of the fluid in the ventricles was sufficient to influence those parts of the brain whence the optic nerve had its source.—*Guy's Hospital Reports*, *Vol.* vi. 1860, *p.* 104.

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## 144.—ON THE TREATMENT OF DIARRHŒA IN CHILDREN.

By Dr. Wilks, Physician to the Royal Infirmary for Children.

[Most cases are cured by a little castor oil, or tincture of rhubarb or some slight astringent mixture. If, however, the case is protracted the best remedy is hæmatoxylon.]

The mixture Dr. Wilks uses is composed of extract of hæmatoxylon, ipecacuanha wine, and tincture of opium, made up with the ordinary chalk mixture. This is a very capital mixture where ulceration of the bowel exists, as in phthisis. Dr. Wilks's favourite remedy, however, is a mineral acid. Sulphuric acid

he has often found successful, but also disappointing, and has thus preferred a mixture which has been spoken of lately as a new discovery—nitric acid with tincture of opium. This may be found recommended in the first edition of Maunsell and Evanson's work on "The Diseases of Children," published many years ago, and in which the authors speak of it as a well-known remedy, and used by the late Dr. Baillie in combination with infusion of simarouba. The re-discovery (if the term may be used) is a sufficient proof of the value of the remedy. Dr. Wilks finds it, above all others, useful in those chronic cases which come to the Infirmary. Should the case put on a dysenteric character, he adds some vinum ipecacuanha. Indeed, in very long-standing cases, the acid with the ipecacuanha will often effect a cure when opium and all other remedies have failed. It is a remarkable fact, that although ipecacuanha seems to have as specific an effect on the intestine as any remedy which is deserving of the name, and was actually introduced into Paris two centuries ago under the name of *Radix antidysenterica*, yet many medical men do not employ this drug for gastric or intestinal complaints; and thus for years we have heard of the treatment of dysentery by various remedies, to the exclusion of this one. Of late, however, it has again been used in India with its old and wonted success.

It should always be remembered that "diarrhœa" is a general term, denoting merely looseness of the bowels; and it is for the medical man to determine on what cause this may depend, as a great variety may exist. The remarks here, however, apply to those cases especially amongst children where we know, from examination after death, that no very marked organic change has occurred, and therefore the simple term "diarrhœa" must be employed. In some of these cases where the nitric acid has failed, a mixture containing nitrate of silver has been given with success. This is a formula introduced into the Pharmacopœia of the Infirmary by Dr. Willshire, who has used it for years with much success. The dose is $\frac{1}{16}$th of a grain in ℥j. of water.

There is extreme difficulty in arriving at a conclusion as to the relative merit of the ordinary medicines for diarrhœa, as it often happens that two cases may come to the institution on the same day apparently alike in every respect, and to which the same medicine is given; and yet one is soon relieved, whilst the other patient receives no benefit. Then, by employing another medicine, a cure is immediately effected. Again, if in a third case this same medicine be given, the diarrhœa will continue until the remedy, which was unsuccessful in the previous case, be now administered. It is remarkable how often a change of medicine of this kind appears necessary, and what is beneficial for one

case is useless in another. It may be, that two cases which appear exactly alike, are not absolutely so, but require different means from the onset. And what is more probable is, that in one case the original cause of the disease may have been long removed, although a chronic morbid condition of the mucous membrane may remain, whilst in another the irritating cause, whether that is improper food, water, or air, may still be present. The cause being persistent, the disease is so also, in spite of the counteracting influence of the medicines. All such causes may be removed in the case of a private patient, and a correct conclusion be arrived at regarding the value of any particular medicine, but amongst the poor, who flock to our charitable institutions, although an opportunity is offered of comparing together large numbers, yet the particular circumstances of each cannot be so well known.

Dr. Wilks also states that amongst the children patients, a large number come under the class of atrophy, a condition generally ensuing on weaning, or occurring before this period if the mother's milk be deficient or bad, or from other causes. In these miserable infants the limbs waste, the belly grows big, the chest falls in, and the head often enlarges. There may be difficulty of breathing, rolling of head, diarrhœa, &c., and, according as any of these is prominent, so the case may be treated by directing the efforts against one of these maladies. In such cases it is often found far better than treating the diarrhœa, to put the child on cod-liver oil and steel wine, when, as the general condition improves, the individual symptoms cease. —*Med. Times and Gazette, March* 8, 1862, *p.* 238.

# MISCELLANEOUS SUBJECTS.

## 145.—ON THE DISCRIMINATION OF URINARY DEPOSITS BY THE UNAIDED SENSES.

By Dr. William Roberts, Physician to the Manchester Royal Infirmary.

The more exact methods of clinical research require both time and opportunity, and it is most desirable, especially in hospital practice, to possess a means of gauging the urine that shall be expeditious, yet sufficiently trustworthy to be relied on with certainty. Exactitude is by no means to be underrated, yet the use of the microscope and test tube require an amount of time not always to be spared for their employment. We believe that the amount of information concerning a urine which may be obtained by the unaided senses of smell and sight, far exceeds both in precision and extent what is usually supposed.]

The most certain knowledge is to be obtained concerning the amorphous urate deposit, *uric acid*, *oxalate of lime*, the *triple phosphate*, and certain colouring and odorous principles derived from certain articles of food, as asparagus, or from certain medicines, as rhubarb, turpentine, and copaiba. The whitish and greyish amorphous deposits are more difficult and often impossible to disinguish by simple sight and smell; but a very shrewd guess can usually be given as to the presence or absence of blood and pus, and the amorphous phosphate of lime; also as to whether the urine is concentrated or dilute, fresh or stale, pure and clean, or dirty from extraneous impurity.

The information conveyed by the sense of smell is highly important. The reaction of the urine can be told thereby, in the greater number of cases, with ease and certainty. If the urine have the usual faint urinous odour, it is always acid; but if the secretion have an ammoniacal odour, its reaction is necessarily alkaline from carbonate of ammonia. And not only is the volatile alkali thus detectible by the odour, but even alkalescence from fixed alkali can be recognised by the same means. As alkalescence from these two causes have a widely different significance, it is very important to discriminate the one from the other. A urine alkaline from fixed alkali is quite devoid of the ordinary urinous smell; it exhales a peculiar sweetish, aromatic odour, resembling the fresh urine of the horse or ox,

which may be artificially imitated by adding liquor potassæ to ordinary urine.

A knowledge of the reaction of the urine is an important and often decisive step towards the recognition of a urinary deposit. Before proceeding to indicate the special marks by which various deposits may be identified, I must remind you that urinary deposits fall into two well-marked natural divisions—namely, (1) *true precipitates*, and (2) *sediments*. The first division embraces those substances which normally exist in urine in the dissolved state, and become precipitated, and consequently clinically recognisable, under certain contingencies of quantity, temperature, reaction, and concentration, which it is not my purpose now to examine: their *presence* in the urine is natural, it is only their *precipitation* that is unnatural. The second division includes all those organic forms and substances—epithelium, pus, blood, casts of tubes, oily globules, spermatozoa, confervoid growths, and extraneous impurities—of which the *presence* in the urine is abnormal or accidental; and which, whenever they are present, form a deposit of necessity, from their total insolubility in the urine under any circumstances. The members of the former group can be, in the majority of cases, readily distinguished by the unaided senses by their mode of precipitation or crystallization; whereas the members of the second group appear amorphous to the unaided sight, and cannot thereby be distinguished from each other. Blood is exceptional to this rule in virtue of its red colour; pus likewise, when the urine is alkaline, may be identified by the tenacious stringy mass which it forms, and which passes commonly under the erroneous name of muco pus. Epithelium, casts of tubes, spermatozoa, together with pus in acid urine, are altogether unrecognisable without the aid of the microscope. I dismiss them accordingly from further consideration at present, and return to the first group or *precipitates*.

Most of these are not deposited until after emission, and the manner of their deposition is often so distinctive that it suffices for their identification. It is consequently necessary to collect the urine in a glass vessel immediately after emission, in order that their mode of deposition may be correctly observed.

*Uric acid* is recognised by its occurrence in crystals, the crystals being nearly always of such a size that the crystalline character can be recognised with the naked eye, by the *orange* or *brown* colour of these, and by the invariably acid character of the urine. Generally the brown crystalline specks are seen studding the sides of the glass, or dotting the mucous cloud at the bottom, or there may be coarse brownish streaks and bands on the sides of the glass, with a floating film on the top; more rarely uric acid forms a distinct layer of deposit. It is only

when the crystals are very small, that a difficulty occurs with uric acid. In albuminous urines uric acid sometimes forms very minute crystals, wholly devoid of crystalline appearance to the naked eye. These form a reddish deposit, much resembling the amorphous urate, but their greater density usually suffices to distinguish them to a practised eye.

The *amorphous urate* is easily recognised by its soft, cloudy, uncrystalline appearance. The urates, like uric acid, have a strong affinity for the colouring matter of the urine, and become tinted by it; the pink, red, and orange urates, by being more deeply coloured than the urine from which they fall; but occasionally the urates occur of a very pale fawn, and may then be mistaken for the amorphous phosphate of lime. There are two conditions which, however, afford a ready means of escaping this error. The first is, that the urate is always associated with an acid state of the urine, whereas the phosphatic deposit is associated with an alkaline urine; and secondly, the amorphous urates leave a peach-like bloom on the surface of the fluid and on the sides of the glass, which is quite peculiar, and when the glass is inclined from side to side, this film, or bloom, comes into view, and identifies the amorphous urate with the utmost certainity.

*Oxalate of lime.*—A deposit of oxalate of lime is nearly always associated with an *acid* urine; it is sometimes, however, present in a feebly alkaline urine, but, never, so far as I know, in a *highly* alkaline urine. Oxalate of lime always occurs in very minute crystals, and it is usually represented as a deposit inappreciable to the naked eye, and requiring the microscope for its detection. It is not so, however; indeed, so far is this from being the case, that, using the precautions already mentioned, oxalate of lime is the most easily and certainly identified of all urinary deposits by the unaided sight. This arises from the peculiar manner in which it is deposited on the sides and bottom of the glass. The sides of the glass are seen to be covered with innumerable exceedingly delicate striæ, running in bands, with a transverse or oblique direction, giving an appearance as if the glass was finely scratched on its inner surface. At the bottom of the glass you will find a still more characteristic appearance. You see a soft, pale gray mucous-looking settling, surmounted by a snow-white undulating coverlid, with a well defined surface. One or other of these appearances is quite characteristic of oxalate of lime. The scratched appearance of the sides is due simply to the deposition of an infinite number of very minute crystals along the invisible lines left after toweling the glass. The white coverlid over the soft grey cloud is composed of pure oxalate of lime; a little of this put under the microscope will disclose myriads of minute octohedra. Let me, however, caution

you against confounding the streaks produced by uric acid with those due to oxalate of lime. The former may be distinguished by the scratches being coarser, and likewise tinted more or less deeply of a brown colour; and, again, with uric acid there is absence of the coverlid appearance at the bottom of the glass, which is peculiar to oxalate of lime.

The unmixed *amorphous phosphate of lime* is associated with an alkaline state of the urine from fixed alkali. It is of a greyish-white soft appearance, less coloured than the urine from which it has been deposited, very light, and sinking slowly to the bottom. It leaves the sides of the glass perfectly clean, and when fully settled has a broken irregular surface. There is likewise frequently an irredescent film on the top which is not composed of distinct crystals.

The *crystalline phosphate of lime* forms a dense snow-white deposit, usually in alkaline (not ammoniacal) urine; occasionally, however, the urine is neutral or even faintly acid, but never sharply acid.

Neither of these deposits is capable of being identified with certainty, unless the alkalescence of the urine be well marked; the former is liable to be confounded with other amorphous deposits, and the latter with the ammoniaco-magnesian phosphate.

The *triple phosphate of ammonia and magnesia* is usually readily recognised by its large, brilliant, colourless crystals, and by the ammoniacal smell of the urine. The crystals either dot the sides of the vessel and the deposit at the bottom, or form a glancing film like burnished silver, on the top, or both. Very often the amount of ammonia present is too small for detection by the smell, and then the crystals must be discriminated by their own characteristics.

A freely ammoniacal urine has always a deposit; and it is composed of a mixture of the amorphous phosphate of lime and the ammoniaco-magnesian phosphate. A urine alkaline from fixed alkali has generally a deposit, but not always; sometimes it is perfectly clear, and this arises, as I believe, from the occasionally very scanty proportion of lime existing in the urine.—*Lancet, May* 10, 1862, *p.* 481.

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## 146.—ON ARTERIAL MURMURS IN INCIPIENT PHTHISIS.

By Dr. W. S. Kirkes, Assistant-Physician to St. Bartholomew's Hospital.

[The following paper was originally read before a private society for the study of chest diseases, in April, 1858. Subsequent

observations have convinced the author more and more of the value of this sign in many doubtful cases of incipient tubercular disease of the lungs.]

The fact that a murmur, or *bruit*, coincident with the heart's systole, but independent of any cardiac disease, may, in many cases of incipient phthisis, be heard in one or other subclavian region, has long been known. Dr. Ogier Ward, I believe, was the first publicly to direct attention to this fact; at least, I have not met with any earlier allusion to it than that in a paper communicated by Dr. Ward to the Medical Gazette about twenty years ago. Therein he speaks of "a peculiar murmur heard in certain parts of the chest of persons presenting symptoms of phthisis," and he says "it occurs in such parts of the chest as percussion or auscultation would indicate as the seat of crude tubercles." Dr. Latham, however, was probably then, if not long before, familiar with the murmur in question, for in his Clinical Lectures on Diseases of the Heart, delivered many years ago at St. Bartholomew's Hospital, he speaks very strongly about it, though at the same time it must be observed that his remarks only apply to a murmur heard in the situation of the pulmonary artery, and not high up in the subclavian region. He says, "Fancy a line drawn from the left side of the sternum along the upper edge of the second costal cartilage, and continued an inch along the second rib; and another line drawn from the sternum along the lower edge of the third costal cartilage, and continued an inch along the third rib. Between these two lines a space is included, in the whole or in part of which a murmur is often audible coincident with the systole of the heart, when no such murmur can be perceived either in the præcordial region, or in the course of the aorta, or in the carotids, or in any part of the arterial system, but here, and here only. It is a gentle bellows-murmur, quite obvious to the ear, and unmistakeable in its character. Of such a murmur, often audible in this situation exclusively, I am certain as a matter of fact, and certain, too, of its very remarkable accompaniments. I have witnessed it in those who were undeniably consumptive, or in those who were too justly suspected of being so. I cannot say in what proportion of the phthisical it occurs; but I am continually meeting with it." It is clear, then, that Dr. Latham was quite familiar with these arterial murmurs, and that he attached some value to them as a diagnostic sign of phthisis. Since this account was published, however, very little has been written on the subject, casual allusion to it in various works on diseases of the chest being nearly all I have met with. I think, however, that

the subject deserves further examination, especially since the murmur in question is frequently attendant upon incipient phthisis, and also since there is often so much obscurity in the other physical signs of early tubercular deposit in the lungs—a little feebleness or coarseness of the vesicular murmur, slightly prolonged expiration, and a somewhat diminished resonance on percussion being nearly the only manifestations of incipient phthisis; and even these are often of very doubtful nature, and rarely exist in a marked degree until a considerable amount of deposit has taken place. Any additional physical sign, therefore, by which the diagnosis of incipient phthisis may be facilitated cannot fail to be of value, especially if it be one easy of detection, such as a well-marked arterial *bruit*.

It may be as well to mention some of the more striking peculiarities by which the murmur in question is distinguished from most other forms of murmur; several of these peculiarities are noted in the extract just given from Dr. Latham's work. Other additional points I have noticed myself.

1. First, it may be repeated that the murmur is independent of a murmur in the region of the heart; this is an important point, for if a cardiac murmur existed, its transmission might, of course, be supposed to explain the one heard in the subclavian region; but again and again I have found the heart's sounds quite healthy when the subclavian murmur was well marked. The conclusion arrived at, therefore, must be that the murmur has its origin at or about the part where it is heard, and not in the heart.

2. Next, as to the situation of the murmur. Dr. Latham speaks of it only as occurring in the neighbourhood of the main trunk of the pulmonary artery, and therefore limited to the left side of the chest, and to that part of the left side where the pulmonary artery is situated, namely, the junction of the second and third costal cartilages and their intervening space to the sternum. But according to my own observation, it occurs even more commonly, much higher than this situation, close under the clavicle, especially towards the humeral end of the bone; and, moreover, it occurs nearly, if not quite as frequently, on the right as on the left side of the chest; in fact, it occurs on that side and in that situation where we often have reason to suspect the existence of tubercular deposit.

3. Then there are certain peculiarities in the murmur itself. Its intensity varies greatly, ranging from the faintest whispering bellows-murmur to a loud harsh roaring sound. On one occasion, a man with symptoms of phthisis presented such a loud and rasping murmur in one of the subclavian regions

that I suspected he had an aneurism there; but on examining him again, a few days afterwards, the murmur had almost completely disappeared; and subsequent observation of the case proved that it was simply one of the class we are considering. This variableness in intensity of the murmur even in the same patient, is another striking peculiarity which it often presents. Even while listening, a murmur which was harsh at first will often gradually become fainter. and may even completely disappear for a while. So fugacious indeed is the murmur sometimes, that I have frequently known it disappear and reappear several times while a patient has been under examination. It may often be noticed, too, that the murmur is much influenced by the respiratory movements; its intensity being often greatest at the end of full inspiration, or just at the turn when expiration begins. Sometimes, indeed, the murmur is heard only at that time, disappearing completely during expiration, and only occurring again at the end of the next full inspiration. Its intensity is influenced, too, as is that of most other systolic murmurs, by the degree of vigour with which the heart is acting; being loudest when the heart is contracting vigorously, as when a patient first enters the room, or is somewhat excited, and becomes fainter as the temporary excitement subsides.

Such are some of the chief peculiarities of the murmur. Then comes the question, "To what cause is the murmur due?" This is the most important part of the inquiry: and I confess there is much difficulty about it; but the following remarks may probably help towards a satisfactory solution of the difficulty:—

1. Is the murmur simply anæmic? *i.e.*, brought about by an impoverished state of the blood, and a corresponding weak state of the vessels. I do not think it is; for if it were so it would most probably be heard at the base of the heart, and along the aorta, and in most of the main branches of the thoracic aorta; but, as observed, the subclavian murmur is usually independent of any cardiac or other murmur, and, moreover, it is commonly heard in one subclavian region and not in the other, a fact quite inconsistent with the supposition of an anæmic origin. Again, if it was purely anæmic it ought to be heard in all cases of anæmia; and it ought not to occur in cases which are not anæmic; but neither of these results is found to happen; for it is rare to meet with the murmur in anæmic cases independent of tubercular deposit, while it is frequently heard in suspected phthisical patients before any marked signs of anæmia are developed. Again, too, if it were anæmic it ought to be constant, or nearly so, like other arterial anæmic murmurs, whereas it is, as I have said, often

most fugacious—fading, disappearing, and reappearing again and again even during the same examination.

2. This variableness in its intensity, and even in its existence, naturally suggests that the murmur is due to some cause which is not always in operation, but only exercises a temporary influence. Now, nothing is so likely to be of this nature as pressure; for we can readily understand that with the continual changes taking place in the respiratory and circulatory movements within the chest, arterial and other canals, with their contents, will be continually exposed to varying degrees of pressure. Some examination of this as the probable cause of the murmur is necessary.

It is, perhaps, scarcely requisite to call to mind that simple pressure on a given part of an artery is sufficient to cause a murmur, by accelerating the current at the part compressed and thus increasing the force with which the particles of blood come into collision with those in the succeeding wider part of the canal. Dr. Latham pointed out this fact very clearly, showing that in children with yielding thoracic parietes it is easy to produce a murmur in the pulmonary artery by exercising a little extra pressure with the stethoscope at or about the second left intercostal space near the sternum; and Dr. Jenner has since confirmed this observation by several additional examples. It being well-determined then, that artificial pressure on an artery, by narrowing its calibre at a given part, may give rise to a murmur, we can readily understand that a like result—namely, an arterial murmur—may ensue when a large arterial trunk is compressed by any solid material such as cancerous or tubercular matter deposited in parts contiguous to it. In order to the production of such a murmur, it is not perhaps enough that the parts surrounding the artery, say the tissue of the lung, should be simply consolidated, but probably they must be so affected as actually to press upon and narrow the artery at some point; as, for example, when a deposit ensues in such a situation as to project above the general level, and this in the immediate proximity of an arterial trunk.

That arterial murmurs in different parts of the thorax may thus be the result of pressure exercised by a tubercular lung, is demonstrated by an example mentioned in Dr. Hope's great work "On Diseases of the Heart." "I had a patient," Dr. Hope says, "in the St. Marylebone Infirmary, in whom I, as well as the apothecary, Mr. Hutchinson, noticed a distinct murmur along the ascending aorta on some occasions and not the slightest in others. I was much perplexed and could not make up my mind as to the existence of valvular or aortic disease. The patient died of phthisis.

nd on post-mortem examination it was found that the nterior edge of the left lung, completely indurated by ubercular deposition, pressed so exactly on the ascending orta as actually to have taken its mould, though without dhering. It was now recollected that the murmur had lways been heard when she lay on her back or inclined to he right side, but not when inclined to the left; hence we scribed it to pressure of the lung on the aorta when the osition of the body caused it to gravitate towards the right ide."—(Third edition, p. 391.) There can be little doubt that Dr. Hope's interpretation was correct; and it clearly suggests o us that tubercular and such-like deposits in other parts nay, when in close proximity to a larger artery, compress it and o give rise to a murmur.

I incline, then, to believe that in the majority of cases in vhich this subclavian murmur occurs in incipient phthisis, it s due to unwonted pressure exerted on some large arterial runk, diminishing its calibre at the compressed part. The ause of pressure is, no doubt, the tubercular matter deposited n the pulmonary tissue. But then the inquiry occurs, What rtery is compressed? This, no doubt, will vary according o the seat of the tubercular deposit. If it occurs below the pex of the lung or near the situation of the pulmonary rtery, this vessel may be the one compressed and the one vhich gives rise to the murmur, as so often noticed by Dr. Latham. The same artery, too, may be compressed and probably generate a murmur in cases where neighbouring ronchial glands are enlarged and filled with tubercular natter. But when the deposit occurs, as it usually does, n or closely adjacent to the very apex of the lung, the rterial trunk most likely to be compressed is the sub-lavian. This artery lies upon, and actually indents the pex of the lung for a distance of an inch and a-half or wo inches on the left side, rather less on the right. Now. vhen the apex of the lung is consolidated by tubercular leposit, we can readily understand that it will tend to exercise greater degree of pressure on the subjacent artery than would ealthy vesicular structure, and would therefore be likely to limmish the calibre of the vessel at that part, and thus give ori-in to a murmur. This supposition is strongly confirmed by the act that the murmur is usually loudest at the end of full inspi-ation; for it is intelligible that when the vesicular structure of he neighbouring portion of lung is fully distended with air, the onsolidated portion will exercise a greater amount of pressure n the adjacent parts than when the vesicular structure is com-aratively empty. The subclavian artery then, I would suggest, s probably the usual source of the murmur so frequently heard

when there is reason to suspect tubercular deposit in or about the apex of the lung; and when heard it may generally be held to indicate that the tubercular deposit is exercising pressure on the vessel. But although the subclavian artery is probably the most common seat of the murmur, yet the aorta, the innominate, and the carotids are all in immediate proximity to the portions of lung most usually the seat of tubercular deposit, and may therefore be compressed by it, and give rise to a murmur. There is, of course, another view which may be taken as to the cause of the murmur; viz., that it may be the result not of pressure on a main artery, but simply of impediment to the transit of blood through the consolidated pulmonary tissue, whereby the pulmonary artery and its main branches become obstructed. But I cannot clearly understand in what way such impediment can give rise to a murmur presenting the characters already mentioned, and I am therefore inclined to ascribe very little influence to this condition.

With regard to the diagnostic value of the murmur, I may add that although its existence may be regarded as a strong additional sign of tubercular deposit, yet its absence must by no means be held as negativing the existence of such disease, for it is quite intelligible that even a considerable amount of deposit may exist without being so situated as to exercise sufficient pressure on any large artery to produce a murmur. Then, again, I would repeat that, so far as I have been able to determine, the murmur is an attendant on the *earliest* stage of phthisis, that namely of tubercular deposition; and on this fact its chief diagnostic value depends, for in the stage of softening the physical signs of the disease are too obvious to need any additional confirmation. The presence of the murmur in the earliest stage, and its absence in the stage of softening, are quite intelligible on the view that pressure by a consolidated lung is the cause of the sound, for it is in the first stage *especially* that this condition is likely to exist, the lung in the later stages being more or less softened, broken down, and hollowed into vomicæ. Moreover, in the later stages the total amount of blood is diminished from deficient nutrition, and the muscular power of the heart is also lessened, so that the blood is propelled with less force.

There is just one other point which I may mention; care should be taken when listening towards the humeral end of the clavicle not to press too hard on the subclavian artery in its course outside the chest, for in some cases I believe I have by such pressure induced a murmur which did not previously exist and this is a caution which should be especially observed in thin and anæmic subjects.—*Med. Times and Gazette, May* 17, 1862, *p.* 503.

## 147.—NEW FRACTURE APPARATUS.

By C. Evans, Esq., House-Surgeon to Birkenhead Hospital.

The patient was admitted with severe injury of the right arm, consisting of a compound comminuted fracture into the shoulder-joint, a comminuted fracture at the middle of the humerus, a compound fracture into the elbow-joint, and a simple fracture of the radius. The lesion of the soft parts was most extensive.

At a consultation of the surgical officers it was proposed to remove the arm at the shoulder-joint. Fully admitting the seriousness of the case, I begged to be allowed to try first the effect of my new splint for a few days, believing that it presented advantages which could not be secured by any of the usual appliances. I am happy to say that my anticipations were fully realised, and at the end of four months the lad left the hospital with a thoroughly useful limb. I saw this lad after the lapse of twelve months, when it was difficult to detect any marked difference between his two arms.

Since the above case occurred, I have used my splint in four other instances, where, though there was not the same amount of injury, unusual mischief existed as well in the shoulder and elbow joints as elsewhere in the limbs, with equally satisfactory results.

The splint to which I have referred consists of a bar of iron one inch wide and an eighth of an inch thick, bent at the shoulder and elbow joints, and armed with five carefully covered pads, two of these being fixed, one at each extremity of the bar, and three of them capable of sliding into various positions. The upper or shoulder pad, with a basis of flat metal, is so bent as to fit accurately on the shoulder, extending over the scapula and clavicle, and arresting, by the assistance of a strap passing through the opposite axilla and buckled by its ends to the shoulder pad, their movements. The other fixed pad is extended, by being secured round the wrist, to prevent all shifting of the instrument or motion in the injured limb. The other three pads are made movable—first to facilitate the dressing of the wounds where these exist, and secondly to assist the close apposition of the limb to the splint. So far as my observation has extended, I know of no form of injury to either the shoulder or arm, including fracture of the clavicle, to which it is not better suited than any form of apparatus that has been hitherto employed.—*Lancet*, *May* 10, 1862, *p.* 486.

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## 148.—ON THE SUBSTITUTION OF IRON WIRE FOR THREAD AND SILK AS LIGATURES FOR ARTERIES.

By Thomas Nunneley, Esq., Leeds.

The fine wire introduced by Dr. Simpson "is not applicable

as a ligature for vessels or other small objects, as it is not suffi
ciently flexible to allow of its being drawn home in a knot, s
as either to cut equally and efficiently through the inner coa
or to certainly close the bleeding orifice without fear of its sli
ping off. Hence, probably, Dr. Simpson's idea of employin
lateral pressure by a steel pin—acupressure, as he named th
practice—for closing an open artery. Though this method ha
been tried in some cases with success, it is not one which eithe
has or is likely to obtain general employment, as few me
will dare to leave a divided large artery so apparently insecur
and presenting so little of the conditions shown by research an
practice to be essential for permanent closure." For some tim
past the writer has been endeavouring to procure wire suff
ciently fine, strong, and flexible to admit of its being use
instead of thread ligatures. He has succeeded in getting som
which possesses these qualities.]

There are two thicknesses: one is probably about No. 42 o
43, but as I have not seen any guage finer than No. 40, I a
unable to say positively its exact number; the thicker portio
is No. 37. The finer is adapted for vessels smaller than th
brachial artery, and might possibly be used efficiently f
larger; but for these I should rather employ the thicker wir
since it is considerably stronger than the other, and yet it
sufficiently fine and flexible to admit of being drawn home in
knot. Both will be found to cut well through the inner coa
of a vessel, leaving the outer one entire, upon which the wi
holds well. In using the wire ligature too much force must n
be employed, or it will cut itself out; and some little care
using a steady, equable pull is necessary, particularly wh
securing the knot, for by a sudden jerk the wire is apt to gi
way at or near the second twist of the knot. This should
avoided; for though I have found in many experiments up
the dead subject, when I have purposely broken the wire in th
manner, that the knot even then commonly is fast, still it wou
not be so secure as if both ends were entire. One end of t
wire may be cut off in the usual way, or both may be c
close off, as has been recommended and practised by D
Sims with silver wire. The former plan I prefer; for
the latter, contrary to what has been asserted, the w
has not uniformly been found to remain quiescent, or witho
exciting irritation and suppuration. With the view of rend
ing the iron wire still more flexible, I have had it annealed,
which it becomes almost as flexible as thread, but this is at t
expense of its strength, so much so that though No. 37 retai
sufficient tenacity to be employed, the finer is rendered so we
as to become useless. Whether by a more careful anneali
this may be prevented remains to be ascertained. Though it

ot necessary, I would remark, that the least touch of oil at
e part where the knot is to be drawn will facilitate the running
the wire, and also that a tolerably long piece should be used,
that it may be passed over the fingers; otherwise a steady,
m pull is not so easily obtained, for the wire is so smooth
at it is apt to slip over them as the knot is drawn. For
tures about the eyelids, where the skin is thin, or about the
ce or head, where it is of importance to avoid all irritation, or
the face, where marks are objectionable, the fine wire will be
eful, for it is so small as to leave hardly a trace of its traject.
need hardly remark, that the wire ligature will be somewhat
nger in coming away than an ordinary thread one.—*Lancet*,
*ay* 10, 1862, *p.* 486.

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## 149.—CHLOROFORM AND CHLOROFORM JULEP.

By Dr. Thomas Skinner, Physician to the Liverpool Dispensaries.

There are two physical properties possessed by chloroform
hich, so far as I am aware, are not alluded to in any of our
xt books on materia medica; namely—1. Its solubility in
cohol, and subsequent miscibility in water; 2. Its miscibility,
not its solubility in water.

Lately, while engaged experimenting in order to ascertain
e probable composition of Davenport's chlorodyne, I acci-
ntally discovered the following valuable facts.

1. If chloroform be dissolved in rectified spirit of wine, of
ecific gravity ·838, at 60° Fahr. (L. P.), in the proportion of
om one to sixteen minims of chloroform in a fluid-ounce, the
sulting liquid is entirely and freely miscible with water in all
oportions. On adding minim by minim of chloroform to the
easure of thirty or thirty-two minims to the ounce of the
ixture, the solution ceases to be miscible with water in any
oportion; the chloroform spontaneously precipitating in small
obules, which ultimately coalesce.

2. If chloroform be added to distilled or any good drinking
ter, in the proportion of half a fluid-drachm to a pint
venty fluid-ounces), and briskly agitated, the resulting liquid
perfectly clear and bright, and no globules of chloroform are
ecipitated, nor can any be detected with a miscroscope by a
wer equal to 250 diameters. On adding more chloroform
*udatim*, the point of saturation is not arrived at until the
oportions are a fluid-drachm to a pint of water. Sixty-four
nims to the pint render the mixture quite opalescent, and
uch of the chloroform is precipitated. At the point of satura-
n, a drop of any essential oil shaken with the mixture will
termine the separation of the chloroform. If the whole fluid-

drachm of chloroform be added *at once* to a pint of water, and shaken, the resulting liquid will not be so clear as when it is added gradually.

Bearing these interesting facts in mind, I resolved to put them to some practical use; and I beg to suggest the propriety of there being two new officinal preparations of chloroform, the names and formulæ for which shall be as follow:—

*Spiritus Formyli Terchloridi* (commonly called chloric ether)—Chloroform, ℥v; rectified spirit of wine, sp. gr. ·838 (L. P.), Oj. Mix. Dose, ℥ss to ℥ij.

*Mistura Formyli Terchloridi* (or chloroform julep:)—Chloroform, ℥ss; pure water, Oj. Mix thoroughly, with brisk agitation, for a minute or two, in a vessel capable of containing double the quantity. Dose, ℥ss to ℥ij.

Either preparation may be prepared from the methylated chloroform; but hitherto I have preferred the unmethylated for administration by the *prima via*.

A chemical nomenclature has been chosen, in deference to the possible and not improbable fears of the patient.

*Remarks.*—The first preparation requires little to be said about it beyond this: that, although it is already very well known to medical men, and to both wholesale and retail druggists, yet, strange to say, its actual composition and the method of preparing it have been kept a secret from the profession, and from the members of the drug-trade as a body. I have been informed that Professor Neligan gives a formula for *chloric ether* and that there is one wholesale house in London that makes it according to his formula. I can only say that the house alluded to must sell chloroform for chloric ether, as Dr. Neligan's formula is for chloroform, which at one time passed under the cognomen of chloric ether—a less questionable title than that given to the solution of chloroform in spirit of the present day. (See Neligan on *Medicines*, 2nd ed., 1847, p. 257; and subsequent editions—1851, for instance, p. 301.)

In this town alone there are not two preparations of the so-called chloric ether alike, either in composition or in the invaluable property of being miscible in water. In the April number of the *Pharmaceutical Journal*, Mr. Norman Tate, of this town, has shown that, out of thirteen specimens of chloric ether obtained by him from various druggists in Liverpool and Birkenhead, there is a difference of 9½ per cent. between the strongest and the weakest samples. As regards the formula for chloric ether above given, I can aver, from considerable clinical experience, that if it be prepared from *bonâ fide* materials, it will equal in medicinal virtue the best chloric ether in the market.

With reference to the other preparation, the chloroform julep

believe it has hitherto been quite unknown; but the simplicity f its composition, the pleasantness of its taste, the fragrance f its odour, its great and undeniable power as a diffusible timulant, and its capabilities as a safe and excellent vehicle for dministering other remedies, alkaline, acid, or neutral, bitter, our, or fœtid, need only be alluded to in order to insure it a eady acceptance by the practitioner of medicine. This prepaation is reported by some who have tried it to be reckoned a pecific for toothache and other painful affections of the mouth nd gums. It is simply used as a lotion, wash, or gargle.

The strengths of the foregoing preparations have been made onsiderably below their respective points of saturation, partly n order to render the dose less irritating to the mouth and hroat, and partly to prevent the separation of the chloroform n the addition of an essential oil or such like medicine to a ixture, particularly if prepared from the julep. —*British Medical Journal, May* 10, 1862, *p.* 489.

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## 50.—ON PRACTICAL LITHOTOMY AND LITHOTRITY.

By Henry Thompson, Esq., Assistant Surgeon to University College Hospital.

[The following resumé gives clearly and briefly the relative dvantages of the two operations of lithotomy and lithotrity in ifferent cases.]

I. For all cases of calculus during the periods of infancy, hildhood, and boyhood—which may be regarded as from one o twelve or fourteen years of age,—the following course appears o be most judicious :—

To practise lateral lithotomy as the rule: the mortality from hich varies during this period from one in eleven to one in irty cases; the mean of the whole being about one in fifteen ases. The exceptional cases are those in which the stone is nly a little too large to pass by the urethra, and therefore *mall.* For these there is no occasion to perform lithotomy. pposed as I am to lithotrity in children as a rule, for reasons lready named, I nevertheless believe that when the stone is so mall as to be pulverised by a single crushing with a suitable thotrite, it is the simplest and best method of proceeding.

With regard to median lithotomy in children, there appears o be no objection to it, provided a director or gorget conducts he finger into the bladder. At the same time I do not know hat it offers any particular advantages.

II. In adult cases we have to decide between lithotomy and thotrity; and if the former is indicated, to point out the par- icular form to be employed.

First: Lithotomy, or Lithotrity?

The special indications for these operations must be considered as they relate to two separate classes of patients:—

(*a*) In tolerably strong and healthy adult patients;

(*b*) In feeble and diseased adult patients.

This division is of more practical value than a division founded on age, because the indications of age are less strongly marked after manhood has been attained than before. If age be regarded alone, the period between twenty-five and forty years gives the best results,—namely, one death in 10 cases from lateral lithotomy. But the data are comparatively few, since it is the period of all others when stone is most rare. The question of age and its effects in adults is therefore included in the major one of constitutional condition.

*In the class of healthy adults.*—If the calculus is of small or of medium size, and single, whether it be soft, friable, or compact, and supposing it proved by preliminary examination that instrumental manipulations can be easily performed and are well borne, it may be crushed.

But the term "medium" here used in relation to size, although admitting of a little extension for calculi of uric acid and the urates, must be restricted quite within the limits assigned for those of oxalate of lime. Their spheroidal general outline makes a medium sized calculus (one inch in diameter) quite large enough, if not sometimes too large, for lithotrity.

If there is any special or exceptional ground for rejecting lithotrity in such cases, some form of central perineal operation is well adapted to them, The median, if the stone is small of medium; the medio-bilateral, if it is of full medium size: the latter offering more room at small risk when it appears to be required. Probably the result by Buchanan's operation would be equally good; its present achievement in adults is at the rate of 8 cases with one death. The median, in adults, from Mr Allarton's collected cases, has given one death in 7. The lateral from 510 cases of adults, in our own table, (but including stone of the largest size,) one death in 5¼ cases. If, on the other hand, the stone is large, and especially if it be also one of compact structure, the lateral operation would, I believe, generally be the best to select. For a large and friable stone lithotrity may be successful; but such an one offering where the patient's age is between twenty-five and forty years would probably be as well dealt with also by lateral lithotomy.

The question to be considered for *(b) feeble and diseased adult patients.*

1st. Where there is no marked disease of the urinary organs but feeble and failing strength:—

If the calculus is of small size and friable, and instrumental

ontact is well borne, there is no question that lithotrity should e the operation selected. If of medium size, one would also ıcline to perform it, if possible; but if hard and compact in tructure, median or medio-bilateral lithotomy would probably e a safer proceeding.

2nd. Where well marked disease of some portion of the urinary rgans exists:—

In stricture of the urethra, especially if it has existed long nd is well marked, lithotomy is preferable to lithotrity in all ases but those of the very smallest calculi.

In hypertrophied prostate, with a quiet condition of the ladder, lithotrity is successful in small and even with medium-ized stones; but with an irritable condition of bladder, and ith compact and large stones, lateral lithotomy seems far prefer-ble, and in such seems more successful than median operations.

In cases where the bladder cannot expel its contents on ccount of loss of power in its coats—i. e., atony—and not on ccount of enlarged prostate, no objection lies on that ground ierely against lithotrity; indeed, such a condition is much ıore favourable to success than that of undue irritability of the rgan. This is now known to every practical lithotritist, lthough it is a condition which not long ago was held to contra-ndicate lithotrity.

In marked disease of the bladder, cystitis with constitutional isturbance, tumours simple or malignant, or if the existence of ıcculi may be suspected, lithotrity is generally inadmissible.

Finally, for cases of either class where the stone is of extremely ırge size, such as are now rarely met with,—say from four ounces pwards,—I doubt whether experience can indicate on the hole a safer method than the lateral operation. We have seen Ir. Crichton's results—viz., eleven cases with two deaths. At niversity College Hospital Mr. Liston employed a double ıcision of the prostate—i. e., an incision of the right lobe as ell as of the left—in lateral lithotomy, for nine cases of unusually rge stone, losing two.

The high operation offers, perhaps, as good a chance, if the ladder be distensible, and the patient is not corpulent. Data, owever. are wanting to determine the value of this as well as ıat of the recto-vesical operation in relation to extremely large ones.

Such, then, are the general principles which extended obser-ıtion and experience indicate, in my opinion, to be our guides selecting the proper operation for given cases. Nevertheless, is not presumed that every example can be brought to rule ıd measure, so to speak, and be mathematically fitted to the rocess requisite for it. Let it be well understood that they e held forth as principles to indicate the way, not as rigid

laws knowing no exception. By some, I am aware, I shall be charged with limiting the application of lithotrity. No doubt more is *possible* by that process. I doubt whether it is prudent to push it further. *It must be our aim to reduce the stones to the process—that is, to detect them early, and consequently small, rather than to extend the process to large and compact stones.* It is true that a stone of that character may be removed in certain exceptional cases by lithotrity, where great tolerance of manipulation by the bladder is exhibited. I may be permitted to allude to one, as an example, perhaps the largest of its kind ever removed by crushing in this country, in the practice of my friend the president, since I had the pleasure of operating during his absence on several occasions. Not less than three ounces and a quarter of exceedingly compact uric acid stone were removed in that case with success; the patient's age being 80 years, and his power of emptying the bladder entirely lost. But this is wholly exceptional, and not to be regarded as a precedent. Had his bladder been irritable, instead of unable to expel its contents, the result would have been impossible. No. I believe that it is certainly true that an undue attempt to extend the province of lithotrity beyond moderate limits will produce nothing but disaster.

Now, I do not know that I could offer a more pertinent illustration of the manner in which I would apply the principles here laid down, nor better exemplify that they are not mere theories on my part, but have been carried into practice, than simply to name the cases that have occurred in my own practice during the past four months while I have been engaged in preparing the material for these lectures, and I desire to point to no better result of their application than the cases in question form. By going further back, I could easily multiply material and occupy your time, but I could not illustrate more effectively. I therefore confine myself within the limits named.

[The lecturer then gave the particulars of five cases in which he had operated during the preceding four months: one by lateral lithotomy, one by medio-bilateral, and three by lithotrity, besides alluding to other cases seen but not operated on in the same period, which need not be presented here.]

I could add numerous illustrations of the advantage of discovering calculus in the early stage, of which two of these cases are examples. I read five cases of this kind, two or three years ago, at this Society, exhibiting the calculi, in order to demonstrate what appears to me the importance of this practice; for I do not hesitate to affirm, that lithotrity for a small, compact or friable stone, occurring in a tolerably healthy subject, devoid

of unusual local susceptibility, at any age above puberty, is, if properly performed, an operation almost wholly devoid of danger. Such a statement cannot be made of any other method of operating for stone.

It follows, then, since every calculus is during a portion of its history, small, and passes generally not very rapidly through the early stages of formation; and since deteriorated health much more frequently succeeds to than accompanies its formation,—it follows, I repeat, *that calculus of the bladder is remorable, if its presence be early diagnosed, in almost every case, with very little danger.*

No proposition can be more logically incontrovertible than this, yet the practice of the past, so far as it depends on diagnosis, though steadily improving, has done so by slow and gradual degrees. Its truth, however, pregnant as it is with the happiest results for humanity, only requires to be known and acted on in order to achieve at once a great advance, and one which I am sure is within our reach. In this department, as in every other of the wide domains of medicine and surgery, diagnosis is the one thing needful. That diagnosis is slowly reducing the size of the stone year by year, and has been doing so during some time past, is demonstrable from our museums. Take that of Norwich, for example,—the most perfect and complete record, literally "graven on stone," that the world possesses of calculous experience. When the art of surgical diagnosis was young, the stone was often overlooked until its large size and long existence precluded the possibility of the oversight continuing. Hence amongst the stones removed there in the end of the last century are seen masses which now most rarely come to light. I calculated the sizes presented during each consecutive ten years down to the present time, and noted the significant fact that they are gradually decreasing in size. In other words it has been successively true, at different periods, that the stone now is detected in an earlier stage of its existence than formerly. Thus, the first or earliest 100 stones in the Norwich Museum have an average weight to each of 8·64 drachms; the second 100, 7·07 drachms; the succeeding 400, 5·95 drachms.

But how much too late is still the stone detected! Ought any man who complains of his symptoms, within reach of competent skill, to carry a stone in his bladder for more than twelve months! nay, more than eight, or six! And if detected thus early—if discovered when it assumes the size of a bean, or at most that of an almond, how often would it be necessary to lithotomize an adult? There can be no doubt that skill in diagnosis is greatly on the increase; and from this fact I may venture to fortell, without any pretension to the gift of pro-

phecy, that year by year the stone will be detected sooner and sooner still, and that therefore, *pari passu*, lithotomy will bebome less necessary, and lithotrity more often applicable. Add to this the fact that the unchangeable conditions of anatomy leave little more to be effected, probably, in the mode to removing stone by the knife; while the improved applications of mechanics to lithotrity are year by year perfecting the process.

I say nothing here of chemical solvents in the treatment of already formed calculus. Of some service in exceptional cases they undoubtedly are. But their special application is to the earlier stage of the calculous diathesis, antecedent to true stone-formation; for the solution of those particles which aggregated, form the stone. For the action of solvents we require minute mechanical division of the material to be acted upon; and here we have it. It is but one step further still in the application of diagnostic science, which recognises in the persistent undue deposit of crystalline material in the urine, and certain associated symptoms, that calculus-formation is imminent or impending; and internal solvents arrest the formation of precipitated deposit, while the erring tendency of the economy is gradually corrected by medical treatment, diet, and hygiene. But of this enough; for the terms of our subject are purely surgical, and there is no further need that I overstep that imaginary line which is supposed to trace the confines of Medicine and Surgery; a subject which nevertheless illustrates well the truth that no man can be a good practical surgeon who is not also an intelligent physician.—*Lancet*, *May* 3, 1862, *p.* 452.

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## 151.—THE ALKALINE HYPOPHOSPHITES AND THEIR MEDICINAL PROPERTIES.

By John Taylor, Esq., Liverpool.

[The reports by different medical men on the action, whether beneficial or otherwise, of the Alkaline Hypophosphites in Phthisis, vary so much that Mr. Taylor was early led to the conclusion that the same drug could not be employed by the different experimenters. On preparing the hypophosphites for himself he soon found that the diversity of opinion respecting their merits mainly depended on the constitution of the salt used—*i.e.*, whether a hypophosphite, or a phosphite, or a phosphate, more or less combined with a carbonate.]

The first startling fact I observed was, that not more than two grains of a pure hypophosphite of potash or soda can be taken for a dose without exciting nausea and a painful feeling within the anterior part of the thorax, much increased by a

frequent repetition of the dose; nor is it surprising that such a feeling should ensue when it is considered that a hypophosphite is the most soluble oxide of phosphorus in the animal secretions, and is at once admitted into the venous circulation. The primitive mode of giving phosphorus to stimulate nervous power was in solution with oil or ether; but these loose combinations were readily decomposed by emulsion formed with the oil, and the separate absorption of the ether, leaving the phosphorus to act corrosively on the stomach. The hypophosphite, therefore, is the most preferable mode of administration, and is superior to the phosphite, which is only partially soluble without the aid of lactic and carbonic acids; and to the phosphate, which is still less soluble even with that aid, and combined with glucose or or sugar, by which means the phosphites and phosphates in food and medicine are rendered assimilable.

The theory of Dr. Churchill and his supporters (as briefly stated in "Braithwaite's Retrospect," vols. xxxvii. and xli., abridged from The Lancet and Medical Times) is that the *cause* of phthisis is the unrepaired loss of phosphorus from the blood and pulmonary tissues, and that the timely introduction of this element into the vital organization is the panacea for the direful malady. "The physiological effects of the soda, lime, potash, and ammonia hypophosphites are twofold," says Dr. Churchill: "they increase nervous force, and are the most powerful hæmatogens; possessing all the therapeutic properties of phosphorus, without the danger formerly attending its use." And further, he adds, "I regard them as prophylactic and curative in every stage of phthisis;" and "I know they will prove not only as sure a remedy in consumption as quinine is in intermittent fever, but also as effectual a preservative as vaccination in small-pox." Experience has not confirmed this extravagant encomium as respects the "*curative* in every stage;" the word *palliative* would be more in accordance with fact, when the remedy has been pure, and with auxiliary combinations. But in the earlier and middle stages, the guarded introduction of an alkaline hypophosphite into the blood produces a glowing influence,—as a respiratory excitant, expanding the chest; as a pyrogene, increasing animal heat and nervous force, and removing erratic pains; and, as a hæmatogen, forming a nucleus for the rallying of red globules: it increases appetite and cheerfulness, and controls expectoration, night-sweat, and diarrhœa. These points I have repeatedly proved in a series of tabulated private cases, and from cases committed to my charge in the Liverpool Workhouse and Royal Infirmary. The degree of benefit derived from a hypophosphite in phthisis depends upon the skill with which the adjuvans and the corrigens are combined. Unguarded by a mild tonic, a carminative, a stimulant, or an anodyne, as

the case may indicate, a genuine alkaline hypophosphite is repulsive to the nerves of the stomach, and the patient refuses to take a second dose, not of one drachm, but even of two grains. My favourite adjunct is compound tincture of gentian, with cinnamon water, and sometimes a little morphia, with the view of obtaining its quiet admission into the circulation, without which no good effect could be reasonably expected. In some cases of extreme debility from cavernous abscess and profuse expectoration, wherein ethers and opiates were barely retaining life, the superaddition of the hypophosphite of potash produced a magical effect, invigorating the muscles so that the chest could be fully expanded, and the lost power of progression was restored, the cough suppressed, sleep induced, and the expectoration much diminished. But this improvement was not steadily maintained, unless the patient was able to procure, and made capable of digesting, sufficient nitrogenous and carbonaceous food containing a due proportion of phosphatic salts to repair the waste that had been so long enfeebling him. And I have frequently found, in the course of my investigations, that when once the vital powers had been aroused by a hypophosphite, the ingesta required to be much increased—in fact, proportionate with the increased secretions of the mucous membranes caused by the hypophosphite; otherwise gastric irritability ensued, with its sequelæ. This feature was particularly observable in the workhouse hospital, where the subjects of phthisis were chiefly the broken-down systems of the intemperate and the extremely poor. The disease seemed all the more rapidly to run its course to a fatal termination under the influence of the hypophosphite of potash, through inability to replace the organic particles lost in the course of the disease. In these special cases, a larger amount of alcoholic food, temporarily supplied, would enable the almost devitalized absorbents to accept phosphatic food; for, as Lehman observes, "the presence of phosphates and an excess of potash salts are the result of necessity in the tissues: and as all plastic secretions notably contain phosphates, the necessity for their reparation is evident, as they are required to supply the first basis of the new tissue."

In this hospital I met with some pleasing instances of the impulsive power of the hypophosphite of potash in renovating the vital powers of some bedridden women who were complaining of deep thoracic pains, shortness of breath, muscular and arthritic pains in the limbs, the result of excessive tea-drinking, and the want of phosphatic food before entering the hospital. One mixture, containing half a drachm of the salt, with one ounce of compound tincture of gentian with cinnamon water and a little mucilage, relieved the pains, and gave the disposition to leave the bed and ask for more food. Some hospitals

abound with cases of this description, set down as neuralgic and rheumatic, in which food is the proper cure; and an alkaline hypophosphite, scientifically administered, may prove the enabling means for assimilating that food, care being taken, when the capillaries have been excited by a hypophosphite, to follow on with such food as will supply the protein compounds, albumen, fibrin, and casein, with the mineral salts.

The controversy as to the merits of the alkaline hypophosphites has awakened the spirit of research. It has led me to the discovery of the aptitude of these salts for many morbid conditions to which they were previously thought inapplicable, and probably others are pursuing the same course of investigation—viz., proving facts in reference to their power in augmenting nervous force in the secerning vessels; in increasing the natural, and diminishing morbid secretions; allaying nervous irritation, and implanting the cementing principle which gives force to other elements in the blood that have become defective through the inordinate lapse of phosphates. Examples are to be found in gestation, prolonged lactation, dentition, some forms of dyspepsia, anæmia, catarrhal and leucorrhœal discharges, and in myalgia and the muscular pains simulating inflammation. But I shall defer the description of these therapeutic points until I have explained the chemical constitution of the hypophosphites.

Owing to the method of manufacture, as described in authoritative books and scientific periodicals, it is evident the product must be in a great measure a compound of phosphite, $PO_3$, and a phosphate, $PO_5$, with some amount of carbonate, the two latter salts prevailing most in the hypophosphite of lime, from the well-known affinity of lime for carbonic acid; yet, strange to say, the other alkaline hypophosphites are directed to be prepared from this salt by double decomposition with their respective carbonates. Correspondence has been had with several manufacturing chemists, who admit this to be the practical mode of preparation: Phosphorus, one pound; calcis, four pounds; water, five gallons—are gently boiled in an open pan until the phosphorus disappears. Now as phosphorus melts at 120° Fahr., boils at 250°, and volatilizes at intermediate temperatures, making the aqueous vapour luminous, and as phosphorus is more dense than the saline solution around it, and consequently remains at the bottom of the pan subjected to the greatest heat of an open fire, sand-bath, or hot hearth, sublimation of a portion of it must inevitably occur. Then as to the remainder, it is first rendered into $P_2O$; then into the hypophosphite, PO. In this condition it readily passes into a higher degree of oxygenation, and becomes a phosphite, $PO_3$, when

surrounded by an alkaline solution under prolonged boiling On further boiling and evaporation, the greater part is converted into a phosphate, $PO_5$. This last change is conformable with the chemical law affecting the sulphites also. Sulphate of magnesia is now made on the large scale simply by boiling a solution of the sulphite in the open air. Dulong, the celebrated chemist, states that when the hypophosphites in solution are boiled in contact with the atmosphere, they are converted into simple phosphates; and Rose, the equally eminent chemist, goes further in stating, that when they are boiled in a close vessel, they remain unaltered, provided no excess of alkali is present. From this statement it would appear that the first-formed portion of the hypophosphite is more difficult to preserve than virtue itself, for it must necessarily be surrounded by excess of alkali. And he further adds: "The conversion into hydrogen gas and a residual *phosphate* is the quicker according to concentration and quantity." It will not now be difficult to understand why one practitioner makes two grains his maximum dose, another five grains, and another one drachm. I do not hesitate to affirm that one drachm of a *pure* hypophosphite of potash ($2\,H\,O,\ P\,O + K\,O + n$ Aq.) or soda ($2\,H\,O,\ P\,O + Na + n$ Aq.) taken at once will produce poisonous effects; and if so, the hospital reports already published of experiments with such large doses of the hypophosphites are altogether valueless.

In the preparation of a hypophosphite the chief points of attention are to keep the temperature below 220° and equally applied around the vessel, and to exclude the air. A water-bath, a steam-jacket, or an oven, answers well. For the exclusion of air, if the vessel be of the common oil-flask form, and the space between the fluid and the mouth be kept constantly filled with vapour, not only is the air excluded, but the issuing phosphuretted hydrogen does not explode within and fall back as phosphoric acid, to form an immediate phosphate. A still better method is to secure a funnel with a loosely-fitting marble, or other spherical body, in it, upon the top of the vessel. But when the operation is carried on a few days at the temperature of 100° to 150°, a stratum of oil of turpentine poured gently on the surface excludes the air, arrests the phosphuretted hydrogen without explosion, and forms a phosphuretted terebinthinate camphor, which imparts a somewhat disagreeable odour to the salt. I have not found the product less efficacious therapeutically. By whatever mode the hypophosphite is prepared care should be taken in the evaporation to form a dry salt that the temperature of 140° be not exceeded. In one of the experiments in the formation of the hypophosphite of soda, the salt became intensely dried in the oven at about 240° Fahr. On

removing it into a closely stoppered bottle, a lambent flame of non-explosive phosphuretted hydrogen gas played over the dried salt for several hours, proving that the constitutional water of composition (for it cannot exist without two atoms of water) was decomposed, one portion of the phosphorus taking the oxygen to form phosphoric acid, the other taking the hydrogen, and forming the non-explosive hydrogen gas, $H_3$ P, the explosive kind being $H_{10}$ $P_5$; or as Levrier has it, $PH_2$. When the solution has attained the crystallizable point, a temperature of about 70° to 90° is best. Though there are good reasons for preparing some of the medicinal hypophosphites by double decomposition, there can be none for the potash and soda hypophosphites. Notwithstanding what Rose says of concentrated alkaline solutions and phosphorus being converted the most quickly into phosphates, I find the strong solutions, as 1·075 to 1·100, best adapted for oxidizing the phosphorus quickly; but of course, if boiled in an open pan, his aphorism becomes true. Liq. potassæ or sodæ, 1·075, takes up one-fortieth part of its weight of phosphorus, a portion of which seems to pass into hypophosphorous acid from a state of vapour; but the greater part passes through suboxidation—the yellow oxide which Graham calls "the hydrate of phosphoric oxide," and supposes it to contain one-fifth water. On brisk ebullition this vapour passes off, and burns non-explosively, constituting a great source of waste in manufacturing on the large scale. By experiment I have proved this loss to be one-third. It is easy to distinguish the escaping phosphorus flame by its luminosity, so different from the bright vivid explosions of phosphuretted hydrogen. Weak alkaline solutions produce much waste of phosphorus in the form of an insoluble flocculent hydrate.

Without speculating on the proximate cause of phthisis—whether it is the unrepaired waste of phosphates from the blood and tissues, as some believe—it is certain that in the course of this and of many other maladies, the secretions and excretions abnormally abound in phosphates, and that in proportion to their excessive loss is the amount of succeeding debility and of sympathetic fever; hence the constant surgical aim, in wounds, abscesses, and sloughing, to assist the digestive organs in the assimilation of phosphatic food. The same necessity exists for a normal phosphatic blood to produce healthy exudations for uniting wounds and fractures. "The idea that the plasticity of an exudation is dependent on the quantity of fibrin it contains is erroneous," says Lehman. "Some plastic exudations are without fibrin, and some non-plastic contain it. The plasticity of the exudations is constantly associated with the presence of soluble phosphates." The integrity of the textures, therefore, depends upon their supply, just as much as in their first organi-

zation, wherein special providential design is exercised. Take, for example, *incubation*. In the yelk of egg phosphates are placed for the *early* nutrition of the embryo chick, and in the *shell* as glycero-phosphate, for the double purpose of affording protection during gestation, and nutritious support during the latter period of embryo development, by endosmosis through the albumen, and the consequent thinning of the shell preparatory to its escape when at maturity.

The providential design manifested in this lower order of vitality should be, and often is, our type for imitation in the ailments of pregnancy proceeding from defective assimilation of food. Human gestation, it is well known, requires the phosphatic salts—so essential for the formation of the child—to be drawn from the food of the mother; and when the due quantity fails to be supplied from this source, supplementary demands are made upon *her* tissues. Hence follow defective secretions, dyspepsia, stitches, neuralgic pains, absorption of fat and muscle, pinched features, and a long train of morbid symptoms usually ascribed to uterine expansion, irritation, and reflex excitement. A modern popular plan of treatment is the exhibition of an alkaline phosphate, with sugar of milk for aiding its solution, the acid secretions of the stomach and the lactic acid from the digested sugar liberating carbonic acid, which dissolve the phosphate. I have found the hypophosphite of potash, in two-grain doses three or four times a day, combined with half a drop of creasote, mucilage or syrup, and the compound tincture of gentian, much more prompt in action, and more certain of gaining admission into the circulation. The superior value of a hypophosphite depends on its ready solubility in the animal fluids and its subsequent conversion into a phosphate. Bischoff observes that "phosphate of lime requires for its solution 2000 parts of water saturated with carbonic acid;" and the phosphates of potash and soda in food require for their solution weak acids, which are not invariably present in the alimentary canal. Thus bread and animal food cease to nourish through the failure of the mucous secretions, and absolute weakness may ensue though copious ingesta are received. These facts form a ground of preference for the hypophosphites over the phosphates as medicines, for the former can reach the lacteals when the latter may not; moreover, the blood being a constantly alkaline fluid, the combined acid of a phosphate may be abstracted, and a more or less insoluble compound ensue, only fit to be removed from the system by the kidneys and other emunctories with the phosphates resulting from effete tissue. Doubtless, in a state of health, the various acid and alkaline secretions of the several portions of the alimentary canal have a solvent action on the nascent phosphates of the food; triple salts are formed, which are absorbed.

by the lacteals, and conveyed by endosmosis through the portal veins to the liver, there to be assimilated. "Phosphorus is the element which accompanies nitrogenous matter in all its phases," says Corewinder, an essayist on vegetable life. It cannot therefore be unphilosophical in us to imitate nature by accompanying nitrogenous food with the most soluble and absorbable salt of phosphorus, in cases of exhaustion of phosphates from the blood in *prolonged suckling;* in the *dentition* of the strumous child; *leucocythæmia* and general *anæmia; catarrhal* and *leucorrhœal* discharges, and all inordinate secretions of *pus; myalgia* and the muscular pains *simulating inflammation;* and in some forms of *dyspepsia;* examples of which will be given.

And first as to over-lactation. The same object which induces us in feeble gestation to plant a further quantity of phosphatic salt in the blood, around which the protein compounds may orally, and so supply without material waste the growing demands of the new offspring, applies to over-lactation. Here is a case in point:—

Mrs. B., aged 40, suckling her fifth child, now three months old, has all the usual pains and stitches in her back, chest, and abdomen, with dimness of vision, nausea at the sight of food, despondency, and a painful sense of dragging in her left breast. Ordered to desist from beer and porter, and to take a mixture containing half a fluid ounce of the unevaporated solution of hypophosphite of potash prepared by myself (equal to one scruple of the dry salt), and half a fluid ounce of compound tincture of gentian, with seven fluid ounces of peppermint-water: one tablespoonful three times a day. Full of ecstacy, she returned for a second quantity, declaring that she "felt new life," that "every dose increased her appetite," and that "all her pains were gone." I observed a freshness in her features and briskness of manner which she had not before; and if she had consented to wean her child I would not have ordered the renewal of the medicine.

One more example, as a type of a large class of cases:—

Mrs. R., a tall, good-looking woman, somewhat pale and attenuated from five months suckling her fourth child, had burning pain at the root of the nipple, and a sense of dragging at the breast; the burning pain remained so long after suckling that she got little or no sleep. She took the mixture as above, with the addition of ten grains of hypophosphite of soda in two fluid drachms of unevaporated solution, and four fluid ounces of mucilage of acacia, supplanting as much peppermint-water, which is my usual custom. I called upon her when she had taken but half the quantity, and found her quite free from pain, increased appetite, and in excellent spirits at the result.

These are striking instances of the power of the alkaline hypo-

phosphites in quickly regenerating the blood, and inducing it to receive the protein compounds.

There is something remarkable in the permanence of effect produced by the hypophosphites of potash and soda in prolonged lactation beyond that experienced in phthisis, which may be partly ascribed to a little free alkali in my first preparations. Guided by the facts maintained by modern physiologists,—that in the blood there is indispensable necessity for free alkali, and that although possessing this property it exudes *free acid* through the capillaries and acid phosphates through the vascular coats,—it is not difficult to perceive how the milk becomes vitiated, the child griped, and the mother a sufferer from muscular pains. I have therefore thought it best to accompany these most soluble salts of phosphorus with an alkali—ensuring their absorption, and neutralizing free acids that might oppose their force; the result in many cases has been beyond my expectation. This fixed necessity for the constant presence of alkali in the blood lies at the foundation of many natural operations; for it is found, as Lehman observes, "that the tendency of oxygen to combine with certain elements is strengthened by the presence of alkalies, whereby the collective organic constituents of the blood are subjected to a process of gradual oxidation by the simultaneous presence of oxygen and loosely-combined alkalies." One of these elements so beneficially influenced is sugar from the carbohydrates contained in nutrient matters, "which, for the most part," says a distinguished physiologist, "reaches the blood in the form of grape sugar, and with the aid of an alkali, contributes to the solution of the carbonate and phosphate of lime.' So powerful, indeed, is this union, that when sugar is thus associated with an alkali it is capable of taking up combined oxygen, and of withdrawing it from many oxides. In this respect alkalized sugar resembles the chief scientific characteristic of the hypophosphites—viz., their commercial value—that of depositing metals from their solutions by the abstraction of their oxygen. Large quantities of alkaline hypophosphites are made for this purpose in America, where their medicinal application and that of the alkaloid and metallic hypophosphites are best understood. It is probable (for too little is known of vital chemistry to enable us to say with certainty) that the alkaline hypophosphites and the soluble phosphates have a controlling power over the oxygen-absorbing property of alkalized sugar for it is found that when the proportion of phosphates in the blood has fallen low the sugar sometimes attracts so much oxygen as to be converted into *oxalic acid*, which would immediately poison were it not for its strong elective affinity for lime which it abstracts, not only from the blood, but, as Dr. Golding Bird has stated, "from the tissues also," constituting one of the

common results of metamorphosis of tissue, and consequent emaciation. These deposits, he observes, "are more frequent in the urine than the phosphates;" they are accompanied with great excess of urea, hence the increased density of the urine, impoverished blood, intense despondency, weakness, and loss of flesh. This deposit of oxalates accounts for some of the persistent forms of dyspepsia so difficult of management, and for which, in accordance with the reasons already stated, the alkaline hypophosphites are well adapted. With these views I have prescribed them with marked success in many cases of dyspepsia, chiefly in sedentary young females and middle-aged people who have abstained from nitrogenous food, and lived principally upon tea and cordials. My hospital reports abound with such cases, and the results have been most satisfactory

I will here relate two cases, types of a numerous class occurring in private practice:—

Miss L., aged 48, has shooting pains through her chest and about the scapulæ, and tenderness on the hypochondrium; occasionally vomits bile; is costive, very weak, and painfully flatulent, with a long catalogue of hypochondriac ills. She lives principally on tea, and has disinclination for any other food. Administered half a fluid ounce of the hypophosphite of potash solution (containing half a drachm of the dry salt) and half an ounce of compound spirit of lavender, in six ounces of cinnamon water; a tablespoonful three times a day. She was relieved in all respects, had a better pulse and softer skin, and could eat beefsteak with a relish. Repeated the mixture, substituting the soda salt for the potash, which is my habit, to avoid the accumulation of any one alkali. In the first selection of the appropriate alkaline hypophosphite I am guided by a natural law defined by Liebig, "that phosphate of potash ($2\,KO,\,HO,\,PO_5$ —an acid salt) exists in the muscle; and that phosphate of soda ($2\,NaO,\,HO,\,PO_5$) exists essentially in the blood; and that the membranes prevent the direct interchange of the salts, otherwise they would be equally distributed over the body. The soda phosphate increases the solubility of carbonic acid in the blood, which phosphate of potash does not; and so necessary is the soda phosphate to the blood, that if the food contains only the potash phosphate, it decomposes the common salt (sodii chlor.) and forms a soda phosphate." So that, as a rule, the soda hypophosphite should be given in blood diseases, and the potash, ammonia, or lime-salt in those of the secretory organs.

As my object is to institute the principles of medicine as respects the alkaline hypophosphites, I have studiously avoided the relation of long cases, and shall therefore give but a brief outline of an every-day case of dyspepsia, occurring in needle-women.

Miss J., a dressmaker, aged 20. Symptoms of milder form than in the last case, but similar in most respects, particularly as to thoracic pains, aversion for food, and weakness, for which tonics and alteratives had been prescribed in vain. Half a drachm of the hypophosphite of potash, combined with compound tincture of gentian, acacia mucilage, and cinnamon water permanently cured her; of course acting on my invariable injunction that when the capillaries have been excited by hypophosphites in the blood, the daily food should be improved. This point should never be lost sight of, or the patient will attain a flattering degree of improvement, and then fall back; for it would be irrational to expect that a mere provocative of function can sustain the whole fabric of animal life without alimentary support! On this ground cases of phthisis have receded from a very flattering degree of improvement produced by the alkaline hypophosphites. One poor fellow, prostrated by cavernous abscess, took the potash salt with ether and ammonia with astonishing effect. In a few days his cough and expectoration were suppressed, and his general strength so far restored that, striking his chest with his hand, he called himself a new man. Passing over to Ireland on the deck of a steamer, he wrote thence to his family, acquainting them with his continued improvement; yet in a few weeks the usual results of tubercular disorganization set in, the power of reparation not being equal to the destructive agency.

In anæmia and leucocythæmia I have prescribed the saccharo-alkaline hypophosphites with considerable advantage, being induced by the fact recently announced by Chevreul and Scherer, "that when hæmatin is dissolved in alkalies it is able to continue unchanged for a long time, and that on the access of atmospheric air it instantly attracts oxygen and becomes converted into a colourless body." Now, as I have before explained, alkalized sugar and alkaline hypophosphites separately possess the power of abstracting oxygen from surrounding bodies; it therefore seemed to me that their united efforts might afford protection to the hæmatin in the blood, and dispose to its increase from the ingesta; and such is the fact. Two cases in elucidation:—

A. S., aged thirty, a female assistant in a shop, has pain through her chest and limbs, palpitation, short breathing, entire loss of appetite, and loathes the sight of food; has no sleep; is giddy on rising in the morning, and can scarcely dress herself; pulse 60, slow and weak; countenance anæmic; catamenia irregular: in short, though she had been a fine muscular, ruddy-complexioned woman, she is now so weak that she can hardly walk up-stairs. The combination of hypophosphite of potash with a little syrup and sufficient

tincture of gentian to render the medicine acceptable was exactly suited to the case. It produced sleep without an opiate—appetite without tonics, so that in five or six days she relished a beefsteak to breakfast; and after two renewals of the mixture (subsituting the soda salt) every function was restored, and with hearty gratitude she observed that "she had never had any thing that did her so much good." Many cases of a proximate nature occur daily, in which the action of the most reliable tonics disappoint, however varied the range. I would suggest to my medical brethren the addition, under therapeutic rule, of a medicinal hypophosphite. It has sometimes had the effect of directing the proper action of the remedy that had previously been inert; and, on the other hand, the efficacy of an alkaline hypophosphite has been increased by the addition of a salt of iron formed by a vegetable acid—the citrate for example. It is the opinion of some persons that in order to test the value of the alkaline hypophosphites they should be given alone, in contravention of the time-honoured practice of combination by which various powers with intensity of action are secured. Take, for example, Dover's powder, and the infinitely varied combinations of calomel, opium, and ipecacuanha, by which our ancestry and ourselves have rendered good service. And so I find, in my experience with the hypophosphites, that not only is the basis (curare) needed, but also the adjuvans, corrigens, and constituens. Creosote, in doses of a quarter to half a drop, is a most favourable adjunct; and morphia proves sometimes an indispensable corrective. Ethers, the vegetable alkaloids, ammonia, liq. arsenical., and such metallic salts as do not produce decomposition, are not only chemically compatible but highly efficient combinations, when therapeutically indicated. A very efficient pill may be formed of two grains of hypophosphite of soda of potash, two grains of sugar of milk, one-fifth of a drop of creosote, and one grain of any desired adjunct powder.

The next case of anæmia is that of a lady fifty years of age, the daughter of a retired navy surgeon, a widow with three children. This was a well-marked case, the extreme pallor of the skin and lips being accompanied with gradual loss of flesh, although her appetite was good, and she was taking freely of animal food and porter daily—her alvine and renal functions being well performed. Still her strength gradually decreased, so that within ten or twelve weeks she was changed from being a fine, tall, robust woman, to a feeble invalid, almost pulseless, and scarcely able to turn in bed; so inelastic were the air-cells and she gasped for air, and required the windows and door of her bed-room open in the depth of winter; she was sleepless; her voice, too, was reduced to a whisper; and she had a few

aphthæ on the tongue and rectum. During the previous eight weeks she took the most esteemed tonics and hæmatogens without effect; and now, when the case had assumed this desperate aspect and her death was daily expected, I put her under the influence of a hypophosphite in the following form:—Solution of hypophosphite of soda, half a fluid ounce (equal to half a drachm of the dried salt); chloric ether, one fluid drachm; muriate of morphia, two grains; compound infusion of gentian to eight fluid ounces: one tablespoonful every three hours. The first effect was to infuse new vigour into her respiratory organs. The gasping for air ceased; and she felt that the beef decoction and other nutriment now improved her strength. A week's repetition of the means produced further improvement, she being able to get out of bed without assistance. On continuance of the medicine the morphia was omitted, sleep having now returned; but as the pallor and aphthæ remained, the tincture of sesquichloride of iron was added, without advantage. We were obliged to retrace; and as the potash salt was substituted for the soda, she rapidly acquired muscular strength, being altogether one month under the hypophosphite treatment; the only remaining symptom being numbness of the hands. The inference is, that the hypophosphites formed a nucleus for the formation of hæmatin, on which the protein compounds fixed and formed a pabulum for the secretions as explained in the exordium. The same reasoning applies to the utility of the hypophosphites in most of the conditions in which they are remedial.

The impulsive demand for tribasic phosphate of lime in the construction of the teeth contributes to the disturbing influence called the fever of dentition; and this disturbance is often found to be most pyrexial in those children that have been ill-fed, or that have been too long suckled, both instances showing the want of a due proportion of phosphates. In the robust there is sympathetic spinal irritation, tending to convulsion; in the feeble and cachectic sympathetic nausea and purging, wearing out existence. In both forms have I given hypophosphite of potash with marked success: in the first, or sthenic form, with solution of acetate of ammonia and syrup of rhubarb; in the latter, with acacia and some tonic or aromatic tincture. It is delightful to witness the consolatory effect upon a fractious, pseudo inflammatory child, some cases of minor intensity being cured by the first effort—say eight grains of the hypophosphite in a two-ounce mixture. Those of the asthenic form had considerable dyspnœa, cough, pale dry skin, and a feeble pulse; some requiring ammonia as an adjunct; others not; but in all the impressive power of the hypophosphite, with its appropriate adjunct, was most satisfactory—frequently but simple syrup or mucilage sufficed.

As to *catarrhal*, *leucorrhœal*, and *ichorous* discharges, and excessive depositions of *pus*,—without reciting their pathology, I may venture to say, that the most recent physiologists have defined the constitution of mucus and pus to be nearly identical, and differing only from other exudations by the considerable amount of "corpuscles they contain, loaded with phosphates and potash." It is not surprising, therefore, that these disorders should be attended with considerable debility, and that the accompanying fever resulting from over-depuration of the phosphates and other salts from the blood and tissues should be more frequently a hectic response than inflammatory. Whatever be the theory, daily hospital practice corresponds with this view. Every effort is made to supply the waste of phosphates by a direct supply of the material lost—from phosphatic food aided by various expedients and vinous stimulants to render that food appreciable. By these means fatal ulcerations of the mucous membrane, and sloughing from pressure on prominent parts, so common in low states of vitality, are prevented. Still success cannot at all times be commanded, particularly in the ichorous rectal discharges of the intemperate, with fistulous openings too prone to slough to afford a chance of reparation by enlarging the fistulous canal; an alkaline, alkaloid, or metallic hypophosphite, as circumstances may direct, will so far improve the alimentary secretions as to render food digestible that would otherwise be nauseated or rejected, by which means further disorganisation may be prevented. On this principle, I have found the auxiliary aid of an alkaline hypophosphite most valuable in cases of over-depuration of pus, and in excessive catarrhal and leucorrhœal discharge, as well as in the graver exudations which gradually and irresistibly wear out vitality. But when advantage is thus gained it requires to be sustained by a sound nutritious diet, or the remedy will have to be repeated so long as the proper nutrition is withheld. If the low vital powers exercised in many diseases scarcely effect the solution of the then almost insoluble phosphates of ordinary food, and if, to quote an aphorism, "animal life dies out if not supplied with salts for the blood, though the food in other respects be nutritious," duty points to the use of a soluble phosphorous salt. The familiar experiment of attempting to sustain life in a dog solely by jelly food confirms the aphorism.

In conclusion, I would say, that I have not the exalted faith of Dr. Churchill in believing that the alkaline hypophosphites can *cure* phthisis in *all its stages*. They remarkably sustain the vital power, inducing a strong hope of a favourable issue, even under the depressing influence of cavernous ulcers; but in the advanced stage, from the want of the undiscovered antidote to tubercular degeneration, fatal lapses frequently ensue. In the

earlier stages, and before vital declension has become a constitutional power controlling every organic function, they have an admirable effect, enabling the best known means to have increased remedial energy, and thus to effect many more cures than formerly.

The superiority of these alkaline salts in controlling night-sweats, compared with the acid treatment formerly in use which too frequently induced alternating diarrhœa, is a point also of some importance; and on the whole, if we believe that "disease is cured by natural processes, promoted by means which uphold vital power, and that our duty is to search for antidotes to morbid poisons, at the same time upholding vital power," it appears to me that we have in *phosphorus* and its *salts* the best known antidotes for phthisis. Much has been recently written condemnatory of this opinion; but when it is considered that the phosphorus administered has been of the ordinary stick form, comminuted, or in solution, and the hypophosphites (so-called) have been given in doses that would have proved poisonous, if genuine, the opposing argument is not sustainable, and the deductions must necessarily be dissimilar. This result, however, has had the beneficial effect of awakening the spirit of research. It has induced some practitioners who have been fortunate in procuring the best hypophosphites extant to give five-grain doses in debility from various causes, and it has enabled me to discover their adaptation to the control of several morbid functions of the neuralgic form, for which the recognised antidotes had been unavailing, in addition to the specialties herein enumerated, many of which, so far as I know, are entirely new to the profession. The most useful in general practice may prove to be their stimulative power on the capillaries of the whole secretory system, another type of which I may add to those already mentioned, in a case of debility after parturition:—

Mrs. P., aged 40, four days after favourable parturition of her fifth child; has a pale, perspirable skin, and a weak non-inflammatory pulse; excretions natural; thinks she has a good flow of milk, but the child is sucking through the whole night, and when removed from the breast is griped with greenish yellow stools, and cries incessantly until fed with artificial food. I gave the mother a mixture of hypophosphite of potash in compound infusion of gentian. She was relieved of her nervous anxiety the first night; but, on the second, both mother and child had perfect composure, the breasts were full of milk, her appetite was improved, and altogether a most agreeable change in her feelings had occurred, very remote from those she experienced when under suppression of milk from the shock of parturition. In promoting secretions, I am preferably inclined to the potash hypophosphite, for reasons explained early in the

rgument; but, as a pyrogenic and reformer of tissue in the dvanced stages of phthisis and other disorganizations, I think, rom the experience I have already had, the amorphous phos- horus will be found superior. I allude to the allotropic form roduced by the subjection of common phosphorus in a closed essel for several hours to the temperature of 400° to 450° Fahr., nd which appears as a soft brown powder, incombustible below 00° Fahr., except when mixed with an explosive salt and nder friction. Within certain conditions, hypophosphites may e manufactured from it, with the evolution of non-explosive hosphuretted hydrogen $H_3P$; a great desideratum, no phos- horic acid being formed. At a future time, when further thera- eutic investigations have been made, the results shall be ublished. Great care should be used in the manufacture of he hypophosphites from amorphous phosphorus, as it will iolently explode, even below 200° Fahr., if the vessel has an dherent crust of carbon, sulphur, and metallic oxide, however mall, the result of previous operations. This remark applies n some degree to ordinary phosphorus, whenever one or more f these adventitious substances are present.

The plea for giving so much importance to phosphorus and ts salts in supporting vital function is, that it is a principal com- onent in the organization of animals and in the circulation of egetable life. It is computed by Stockhardt that the bones lone of the human body contain from sixteen to twenty-eight unces of phosphorus besides what is contained as the skeleton f the blood, flesh, and viscera; and as it is the cementing rinciple and bond of union to the other components of texture r tissue, we frequently witness the rapid disorganization aused by its displacement. Even a little alum in bread, by bstracting the phosphate of lime and forming an insoluble hosphate of alumina, soon softens the bones and makes their trength depend on lime and gelatin; the obvious consequence f which in the long bones of children is frequently a case of ickets, and in the viscera lesions not so well defined but equally estructive to health. It is somewhat remarkable that phos- hate of soda, so essential to the blood, is technically used to ender fabrics incombustible. It may have the property of con- rolling the too rapid combustion of the blood in respiration; if o, it is a curious fact in physiology, that a hypophosphite should e a pyrogenitor, and a phosphate a pyroannhilator. Phosphates ave been designed as the durable cement for both organic nd inorganic structures; and as when Roman cement formed rom the phosphatic stone nodules of the London clay is ixed for use with too much silica, loses its cohesive force, nd crumbles to decay along with the building it was intended o support,—so with organic structures, when the normal pro-

portion of the phosphates is reduced by morbid vital action or defective supply, disintegration of the bloodvessels ensues, as manifested in many forms of disease, attended with considerable weakness; chronic albuminuria may not prove an exception, and the replacement of phosphates by means of saccharo-alkaline hypophosphites may produce a beneficial result.

It is not in the vast, the awful, and the overwhelming alone that we are to look for the beneficent designs of creation, but also in the minute details of organization; and not least, probably, in the wisdom which constituted the basis of the tissues a *monobasic* phosphate suitable for absorption and replacement, and that of the bones *tribasic*—forming a structure so durable that, unless destroyed by diseased vital action, ages pass away but sparingly decomposing it, and even when exposed to air disintegrates more slowly than many rocks. So important is the continuous supply of phosphorus for the maintenance of animal and vegetable life regarded by a French writer, Baron Ernouf, that he deeply laments its possible exhaustion, and predicts "that as its return to the earth is not at all in proportion to its removal in grain and other produce, a day will come when the sun shall shine on an unpeopled and desert globe." The great error, he thinks, is in human sepulture; his aim being to make the fathers' bones subservient to the children's bread. Though many tons of phosphates are now wastefully washed into the sea for sanitary purposes, there is no fear of the future providential supply of phosphorus,—relying on the fact that its elements will in the progress of science be discovered and applied. A Scotch professor of chemistry throws out the suggestion that phosphorus probably consists of *hydrogen* and *nitrogen;* and he draws this conclusion from its analogies. If his speculation be correct, it is possible that it may be in some degree spontaneously formed as a secretion designed to give vital stimulus to each organ, and that reparation chiefly depends upon artificial supply from the ingesta.*—*Lancet*, *Nov.* 30, *Dec.* 7 *and* 14, 1861, *pp.* 517, 544, 564.

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## 152.—ON URANOPLASTICS.

By George Pollock, Esq., London.

It has fallen to my lot to have had the treatment of more than one case of complete congenital cleft of the hard palate and complete closure has been the result in each. Several of the cases have been operated on in the hospital, so that their results are known to others as well as to myself. The experience

* If any one wishes for my particular alkaline hypophosphites, they can be obtained from Mr. Charles Taylor, manufacturing chemist, 10, Cleveland-square, Liverpool; at 2s. per ounce.

gained in the treatment of such cases enables me to assert that the most favourable cases for operation are those in whom the cleft is complete or nearly so. Attention has already been drawn to this fact, and the explanation is simple. The more complete the cleft, the nearer the perpendicular are the sides of the palate, and, consequently, when the soft tissues are detached from the bones, the flaps formed fall inwards, and very readily meet in the median line. Indeed, in some instances so abundant has been the flap on each side that their margins have had to be somewhat freely pared to prevent the edges overlapping, for by their so doing the efforts to secure union would be frustrated.

The really troublesome cases in treatment are those in which, firstly, the cleft is confined to the posterior part of the hard palate, and in which, secondly, the opening in the palate is the result of exfoliation of bone.

The difficulties in the treatment of such cases arise from the circumstance of the arch of the palate being of the natural curve, or nearly so; the consequence is, that when a gap or opening exists in any portion of such an arch, and the soft tissues are separated by operation around either aperture, the edges of the flaps will rarely meet in the median line by the mere falling down of detached soft structures; lateral incisions then become necessary; and thus an additional interference with nutrition of the flaps is set up.

The difficulty of bringing the edges together, in certain cases of the character last referred to, is so great and so evident, that it would be unwise to attempt a closure by operation.

The complete congenital cleft offers the best prospect of success of closure by operation; and there is little credit due to the surgeon who overcomes a deformity so apparently difficult to deal with, but which really is by no means so troublesome to close as a slight posterior cleft. It must be understood that we do not allude to clefts confined to the soft palate; such clefts are not under consideration.

An error into which Professor Langenbeck has fallen, relates to the causes of failure in operations for cleft palate. He considers that his method of operating possesses an advantage not obtained by other surgeons, and this advantage he supposes to depend on the circumstance of his peeling off the periosteum, together with the soft structures which cover the sides of the hard palate. He states that it is much easier to separate the mucous membrane alone; but "if this membrane is separated to a great extent, gangrene ensues; and it is the reason that a complete cure of a total cleft of the hard palate has never been accomplished by that operation." He further entirely ignores the

possibility of the success of any one but himself; for he continues —"but that this (the separation of the periosteum) has, in fact never been done, is evident not only from the express statemen of those surgeons [named], but also from the fact of the partia or entire failure of their operations."

We need not stop to inquire by what means the Professor ha established the correctness of his new theory; but it is desirabl to test the truth of his statement, that it is easy to separate th mucous membrane from the periosteum, and that his own suc cess is due to the periosteum being always separated with th mucous membrane in his operations.

It is impossible in the living subject to prove that, during a operation for closure of a cleft palate, the mucous membrane i readily separated from the periosteum, or that the latter is no detached from the bone; but in the dead subject it will be foun equally impossible to separate from the bone the mucous mem brane without the periosteum. In most cases which come under th surgeon for operation, the patients are not far advanced in life Up to the middle periods of life the under surface of the har palate is rough, and often ridged with thin prominences of bone In attempting to peel off the mucous membrane the periosteum is detached with it to a great extent without any care or trouble but many little patches remain adherent to the depressions an furrows in which the vessels run and send to the bone it minuter nutrient branches. If any one curious on this questio will endeavour to remove the mucous membrane from th palate in the dead subject, it will be found by no means a easy process, without, at the same time, removing the perios teum with it.

It will be quite evident from the results of such an examina tion that Professor Langenbeck has not effected in his operation more than has been achieved by other surgeons experienced i the treatment of clefts of the hard palate.

The true causes of failure in operations for closure of cleft running into the bone have been entirely overlooked by th Professor. In detaching the soft tissues the parts are ofte bruised, and then invariably some interruption to union wil result. But the chief cause of failure is the difficulty of gettin the edges of the soft flaps to meet without any traction b sutures. This difficulty never presents itself in complete con genital clefts; in such cases the flaps meet readily from thei falling inwards and downwards when sufficiently detached But such a difficulty is always more or less met with in cleft confined to the posterior portion of the bone, and in acquire openings in the palate; and when such a difficulty present itself it can only be overcome by lateral incisions, parallel wit the margins of the cleft or openings.—*Medical Times and Gazette Feb.* 8, 1862, *p.* 144.

## 153.—LALLEMAND, PERRIN, AND DUROY ON ALCOHOL.

The following excellent summary of the work of MM. Lallemand, Perrin, and Duroy, is from the Report (by M. Rayer) presented to the French Academy on the occasion of the presentation of a prize to the authors :—

Alcohol is a body whose study is of great interest as regards physiology, medicine, and hygiene. It has, hitherto, been the subject of experiments; but its real action upon the organism had yet to be shown. MM. Lallemand and Co. first sought for a means by which they might be able to recognise the presence of very small quantities of alcohol in the tissues and fluids of the body. Having obtained such a test, they then proceeded to follow the course of the alcohol into the body, its absorption by the digestive organs, its circulation in the blood, its localisation in certain tissues and in certain organs, and then its elimination by different parts of the body. They examined with especial care the question, whether alcohol, in its passage through the body, retains its chemical composition, or whether it is converted into products of combustion; whether, in fact, it behaves as food or as a non-assimilable substance, foreign to the body. These points are all treated experimentally by M. Lallemand and his associates.

By these experiments they establish, in the first place: that alcohol mixed with water is rapidly absorbed by the stomach, passes into the blood, and reaches the lungs, which are the chief organs of its elimination. A few minutes after the ingestion of alcohol its presence is noted in the air inhaled from the lungs; and the inhalation may continue for many hours, according to the amount of alcohol ingested.

Four men, each of whom had taken 100 *grammes* of brandy, passed their breath during four hours (relieving each other) through an apparatus. The liquid products of the condensation of the vapour thus introduced into the apparatus was twice distilled over quick lime, and yielded 4 *grammes* of a limpid liquid, having a distinct alcoholic odour. It was, in fact, diluted alcohol, and was capable of burning when heated. The alcohol also passes off with the urine. Three *litres* of the urine of four men who had taken three bottles of wine, containing 10 to 12 per cent. of alcohol, and about 120 *grammes* of *eau de vie*, were collected. The urine was carefully distilled, and yielded 2 *grammes* of highly concentrated and nearly pure alcohol. Alcohol was also extracted from the blood.

In ascertaining this fact, the authors were led to a remarkable discovery, viz., that the blood was not the part of the body which contained the largest amount of alcohol. 240 *grammes*

of alcohol of 21° were injected into the stomach of two dogs (120 into each), and in an hour and a half 700 *grammes* of arterial blood were taken from the carotids of the animals. It was then distilled, and gave five *grammes* of concentrated and nearly pure alcohol. When different parts of the bodies of these animals were subjected to distillation, it was found that the nervous tissues of the liver contained a larger proportion of alcohol than the blood; and that in the muscles only a trace of it could be found: the blood, for instance, containing 1, the liver containing 1·48, and the brain 1·75 proportional parts. Alcohol, therefore, accumulates by a sort of affinity in certain parts of the body. The fact well corresponds with the well known pathological effects produced in the liver and the brain by alcohol. Our authors then endeavoured to ascertain whether alcohol was decomposed in the body; whether, in fact, it could be considered as a respiratory food. They sought for the products of its combustion, aldehyde and acetic acid. But all their experiments were negative; and they therefore concluded, that alcohol must be considered as a non-assimilable substance, acting as alcohol in the body, and as a local excitant of the tissues. Hence, then, alcohol ingested is absorbed. Introduced into the circulation it pervades all the tissues; it accumulates in the liver and the nervous centres; it remains a long time in the body; it is eliminated as alcohol by the lungs, the skin, and chiefly by the kidneys. The localisation of the alcohol in certain organs explains its pathogenic influence over certain constitutional and organic diseases of the liver, the nervous system, and the kidneys.—*British Medical Journal, Feb.* 8, 1862, *p.* 152.

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## 154.—ON PODOPHYLLIN.

By the Editors of The Lancet.

[Podophyllin is a preparation from the root of the Podophyllum peltatum. It has been known for more than forty years, but has not come into general use until now. It rather resembles jalap, but is slower in its action.]

Our lists of materia medica are so rich in alvine evacuants that, were it nothing more, the podophyllum might well be disregarded. But it is now known to have very different and extremely desirable properties in the treatment of diseases, as we shall proceed to explain.

Frst, however, we may notice that the Podophyllum peltatum, May-apple, or mandrake (which latter name it shares in common with other quite different plants)—belongs to the natural order *Ranunculaceæ*. It is found in great abundance in all the northern

states of America, from New England to Georgia, propagating itself rapidly by its roots, so that it presents two favourable conditions—cheapness and unmistakableness. Its fruit is sub-acid and agreeable to some persons, and is eaten with impunity under the name of *wild lemons*. The leaves are said to be poisonous and narcotic, but do not appear to have been investigated.

The remedial and physiological properties of this root are thus described by Dr. King, of Cincinnati :—"When fresh it is an irritant poison, producing hypercatharsis, hyperemesis, gripings, and other unpleasant symptoms. The violence of its action is much modified by drying and long keeping. It is still a violent cathartic and emetic in doses of thirty to sixty grains. In moderate doses it is cathartic similar to jalap, but acting more *slowly*. As a deobstruent, it is one of the most valuable in the materia medica, acting upon all the tissues of the body. Small doses, repeated at short intervals, to fall short of catharsis, will, in many persons, produce ptyalism. Its cathartic action often requires twenty-four hours, and is accompanied by much griping.

"In chronic hepatitis there is not its superior in the whole range of medicines, being vastly more useful than mercurials, rousing the liver to healthy action, and maintaining an increased flow of bile longer than any other agent. In alterative doses it has been found valuable in scrofula, syphilis, rheumatism, and other chronic diseases. In constipation it acts without inducing subsequent costiveness. Ithas also been found useful in amenorrhœa, dysmenorrhœa, worms, and affections of the bladder. The dose of the root in powder, as a cathartic, is ten to twenty grains, of the tincture ten to sixty drops. As a sialagogue or alterative, three to ten grains of the powder, and five to twenty drops of the tincture."

The interest of these facts lies in their being a correct representation of the properties of a vegetable in its crude state which yields a preparation of so much greater value and importance, as we shall proceed to explain, than we have in podophyllum. We may, however, remark, that an acrid principle, not, so far as we know, yet isolated, is contained in the root, and attaches to the infusion and the tincture, which produces such extremely unpleasant sensations in the fauces and throat as to be compared to the burning and smarting which follow the swallowing of sulphate of zinc, and often induces nausea and vomiting, with great and distressing depression. From these circumstances we doubt whether, with all its virtues, the Podophyllum peltatum would have found a place in our materia medica had not the preparation we are about to describe been devised—namely,

*Podophyllin.*—This substance, which, according to the testimony we shall adduce, must be a most curious and valuable

remedial agent, is one of the concentrated preparations described generally in a former paper. Unfortunately the name has been given to two essentially different things, which it is necessary carefully to distinguish.

1st. The term Podophyllin has been applied to the resin extracted from the root, and purified by the separation of all the other principles.

2nd. To a mixture or compound of these prepared by the following process :—The root, coarsely powdered, is treated with alcohol by percolation until exhausted. The saturated tincture is placed in a still, and the alcohol distilled off until the solution is left of a dark colour and the consistence of treacle ; this while hot is poured slowly into three times its volume of cold water, and stirred briskly during the process. It is then allowed to stand twenty-four hours. Some muriatic acid is added to the supernatant fluid, which completes the precipitation. The precipitate is then placed on a linen filter, and washed repeatedly with cold water ; then between folds of bibulous paper, and dried at a temperature between 65° and 90° Fahr. It is of a greenish white colour. If a higher temperature is used for drying, it becomes of a darker colour. This is the podophyllin of commerce. That sold by some makers has an olive-green tint, which is said to result from the use of a solution of alum, to effect the precipitation, instead of water only.

It is probable that in a few instances the pure resin has been employed, and the results have not been satisfactory.

The podophyllin of commerce is not wholly soluble in alcohol nor in ether, but both these solvents dissolve parts of it. It is insoluble in water, dilute acids or dilute alkalies, but it forms a saponaceous compound with pure alkalies.

Some pharmaceutists consider that it is solely composed of two resins ; whilst others maintain that besides the resin which forms the greater part of its bulk it contains four other distinct resinoids, an alkaloid, and a neutral substance. The pure resin (the podophyllin of Mr. John Lewis) is said, when given pure, to produce sickness, hypercatharsis, and great griping ; while to the other principles it owes its cholagogue, eliminative, and alterative properties ; and it is alleged that the latter greatly and beneficially modify the action of the pure resin, and that the full therapeutical advantages are only to be obtained by the use of the compound. If podophyllin is prepared in this country, it is necessary to be extremely careful to obtain the root properly and recently dried. The fresh root being too acrid, probably loses some volatile and offensive matter by drying ; whilst if kept too long, it undergoes such changes as not to yield all its active principles to alcohol.

Podophyllin has been very extensively employed in America

since the year 1847. Dr. John King, of Cincinnati, however, claims to have been acquainted with it, and to have used it in his practice, as early as 1835. He gives the credit of the recognition of the properties of the podophyllum peltatum, and many other American indigenous plants, to Dr. Tully, formerly professor in Yale College, Connecticut. The practitioners calling themselves "Eclectics" have written on the subject so extensively, and attributed to it such remarkable and valuable therapeutic properties, that their testimony might seem to be overstated and almost fabulous, did we not find sober-minded and scientific physicians equally enthusiastic on the subject. The sum of the expressed opinion of both parties is, that it exercises an influence on the human constitution, and is remedial in as wide a range of diseases as mercury, without having any injurious effects whatever. The primary actions they attribute to it are—emetic cathartic, cholagogue, generally eliminative and therefore diuretic, diaphoretic, emmenagogue, sialagogue, &c. Hence it is powerfully alterative, capable often of arresting fevers by a single dose; of removing congestions of the brain, lungs, liver, or spleen; of reducing glandular enlargements; of affording great relief in inflammations of almost every organ; of curing rheumatism, jaundice, croup, habitual constipation, amenorrhœa, and, in minute and long-continued doses, many skin diseases, and even syphilis and scrofula. It is regarded as almost a specific in all disorders of the liver; as indispensable in all fevers—intermittent, remittent, and continued, but particularly puerperal; as valuable in pneumonia, bronchitis, and phthisis. Not only, say they, is it capable of effecting everything that is expected by the agency of mercurial preparations, but it is beneficial far beyond them, and in diseases for which they are inapplicable. Apologizing for thus extolling a remedy so recently discovered, beyond one which has been in the hands of the profession for ages, and the reputation of which is established beyond controversy, they nevertheless maintain that their eulogiums are based upon sufficient and careful observation. Were we to quote the authorities for all this to be found in the medical literature of America, we should be compelled to extend this notice far beyond the limits allowable in the pages of a periodical; and we therefore deem it better, and we trust it will be regarded by our readers as more satisfactory, to produce the experience of practitioners on this side the Atlantic, who have for a long time employed podophyllin, confining our quotations to one or two notes relative to the manner of its administration. First observing that a correspondent of an American journal states that he has treated with complete success one hundred and twenty cases of syphilis with this medicine alone. The general statement of its being curative of this disease is made

by many authors; and although we have no precise evidence on the point except the above, we have reason to believe that podophyllin has found its way into the hands of several irregular practitioners in this country, who use it as a substitute for mercury. We should therefore commend it to the attention of gentlemen who have opportunities to verify or refute the allegation. 1. It is said that the purified resin of podophyllum, improperly called podophyllin, is escharotic, producing, when applied to the skin, small pustules which are difficult to heal, internally giving rise to extreme griping and violent catharsis. 2. That chloride of sodium given with podophyllin increases its purgative action to an undesirable extent, and should therefore be avoided, except in cold phlegmatic habits where the action of the drug is feeble. 3. That lactic acid counteracts its operation; and that sugar, sweetmeats, pickles, and like substances, should be avoided when it is administered. On the other hand, many writers recommend it to be well triturated with four or five times its weight of fine sugar. 4. That its use should be avoided in inflammatory states of the stomach or bowels, particularly of the mucous lining of the primæ viæ. 5. That a warm infusion of ginger is the best means of relieving tormina and griping when caused by its use. 6. That for an overdose, sour milk, whey, or any form of lactic acid, are the best remedies. Lastly: That as a purgative, bitartrate of potass, twenty to thirty grains, is the best adjuvant; while when given as a cholagogue or alterative, it is well to combine it with minute doses of extract of belladonna, hyoscyamus, or cannabis indica.

The doses of podophyllin are from one to three grains as a cholagogue and cathartic; half to one grain as a moderate purgative; one-fourth to half a grain as an aperient; a sixth to a quarter of a grain, three times a day, as an alterative.

Having briefly stated the American evidence relative to the remedial properties of podophyllin, we proceed with the observations made upon its use in this country. The following is from Dr. GARDNER:—

"My attention was drawn to the subject of podophyllin in the year 1856, by a brief paragraph in some periodical—I think American—stating that Dr. Glover of Massachusetts, had found it to be a remarkable cholagogue in doses of one grain. I wrote to Dr. Glover, who kindly replied, with such further information as he possessed. A very small quantity only was procurable in London; I therefore imported several ounces from New York, manufactured by B. Keith and Co., and immediately commenced experiments with it on the persons of the *employés* of the Apothecaries' Company, with which I was then connected, and on my patients; and furnished several practitioners with examples.

"From 1856 to the present I have constantly employed podophyllin in my practice, and the result of my experience is as follows :—

"1. I know no other substance which so certainly produces bilious evacuations when the liver is full of bile; I do not even except calomel: a full dose—namely, two grains (when pure)—producing effects very similar to those resulting from ten grains of calomel. I have seen jaundice, where the stools exhibited no trace of bile and the skin and eyes were of deep yellow, cured by a single dose, incredible quantities of bile being evacuated. With respect to this action of podophyllin, I think I am warranted in asserting, strange as it may appear, that if, after a free evacuation of bile, a second dose of two grains is given within two or three days, it produces no effect whatever, not even purging. This certainly happens in ordinary engorgement of the liver, if not in jaundice. The purgative effect in nearly all the cases is not direct—that is, it does not act on the bowels for ten or twelve, or even in some cases sixteen or twenty hours; the purging appears to result from the large amount of bile thrown into the bowels. Sometimes its action is without uneasiness, but generally there is a sense of tormina or twisting and spasmodic action in the upper region of the abdomen and about the navel.

"2. In the torpid liver of persons who have resided in tropical climates, a dose of one grain seldom if ever fails to rouse the secretory action of the organ and bring bilious-coloured stools; but it often requires twenty-four to thirty-six hours to act on these patients. It is only at long intervals that the dose requires to be repeated. These patients are, as is well known, accustomed to take blue-pill, and often suffer much from nervous irritability, ulcerations of the mouth, diarrhœa or costiveness, or both alternately, depression of spirits, and many other evils, which all pass away after a dose of podophyllin.

"3. In the constipation which often besets patients in phthisis—as I think, most frequently from fatty liver,—the podophyllin is the best aperient I have found, though, for the above reasons, very long in acting on the bowels. I have given it in all stages of this disease with marked benefit, not obtainable from any other purgative.

"4. I have given it much in gout, deeming it an important point of treatment to secure free biliary evacuations, which it invariably does; but I have not trusted to it alone, as I think might be safely done; and the same in acute rheumatism. My mode of giving podophyllin has been to make it into a small pill with soft extract of henbane, or one-eighth of a grain of extract of belladonna, or more frequently with ano-

ther concentrated vegetable resinoid, leptandin, either of which moderates the tendency to harshness of the podophyllin.

"5. In constipation without other disorder, I usually give one-sixth to one-fourth of a grain in a pill of compound rhubarb-pill. It acts thus very much the same as we expect a grain of calomel or five grains of blue pill with the compound rhubarb-pill to act; and I consider that it may in very numerous cases be substituted for mercurials with great advantage.

"6. Whenever I have deemed it desirable to evacuate or stimulate the liver, as in bronchitis, fevers, headaches, &c., I have used this medicine with highly satisfactory results.

"7. Aware of the eulogiums which have been bestowed on podophyllin as an alterative, anti-syphilitic, &c., I cannot either contradict or confirm them from my own observations; but I have met with two or three cases where it unequivocally produced ptyalism.

"Lastly. On my recommendation it has been introduced to the Jewish Hospital at Jerusalem, where liver disorders abound, and I have the general report that it is found to justify the most sanguine expectations of its remedial value; and I may add, from many of my friends who have employed podophyllin, I have received opinions confirmatory of my views."

We have been also favoured with the following:—

"Dr. Ward has administered podophyllin during the past year at the Seamen's Hospital, 'Dreadnought,' and in private practice in a considerable number of cases. The affections in which he has found it useful are cardiac, renal, and hepatic dropsies, an asthenic form of dropsy frequent amongst sailors, and not associated with organic disease; congested and indolent liver. He has given it in doses of half a grain or a grain. Its action has been slow, ten or twelve hours having usually elapsed before it has effected evacuation of the bowels. In the majority of cases it has not occasioned discomfort in the way of nausea, griping, or depression. It is less hydragogue than elaterium, but never fails in its cholagogue action; producing copious bilious stools, semi-solid at first, subequently watery. In two other cases, Dr. Ward has found it to linger for a considerable period in the bowels, and cause much griping and irritation; but these results might be obviated by quickening its action by combination with some other drug. Dr. Ansell informs Dr. Ward that he has given podophyllin in doses of a quarter of a grain twice a day in cases of amenorrhœa with constipation, and has found it act as a powerful cholagogue cathartic and emmenagogue. The drug may certainly be regarded as a valuable addition to our materia medica."

Dr. Ramskill, Physician to the London and Epileptic Hospitals, has favoured us with the following valuable remarks and cases. It will be observed that his experience of the effects of podophyllin is remarkably confirmatory of the opinions of the American physicians :—

"Podophyllin may be given alone, but it is apt to gripe. At the London Hospital I invariably order a pill of equal parts of podophyllin and extract of Indian hemp. It is then slower of action than when given with hyoscyamus or conium, but less frequently gripes. At the Epileptic Hospital I have not for more than a year used any one other pill as a purgative for epileptic patients, except under special circumstances. The formula I use is extract of belladonna and podophyllin, of each one-fourth of a grain, made into a pill with extract of mines-permium fenestratum. The latter drug is rich in berberine, and is used as a tonic adjuvant. Belladonna has, itself a laxative tendency; but it is not used for that property. One or two such pills are usually sufficient, if continued for two or more successive nights.

"The cholagogue action of podophyllin is not confined merely to the period of its administration; large quantities of bile will continue to flow for several days after ceasing its employment.

"Latterly, at the London Hospital, I have administered podophyllin in about fifty cases a-week. In three cases only has its action been seriously complained of, the complaint being its excessive action, with pain. The dose was, in fact, too large—namely, half a grain, all the three patients being women. Except under such circumstances, the evacuations from podophyllin are very rarely watery; they are always fæcal at first, followed by the peasoup-like evacuations we see follow from the continued use of colchicum, but of a brighter colour. With regard to the colour of fæces generally, I must say that a brown colour does not, in my opinion, prove the presence of bile, for the dark epithelium thrown off in the colon may cause this; neither does a pale clayey series prove that the liver does not secrete bile, for this may be limited in quantity and absorbed for well known uses in the economy. (Liebig.) But a quart or more of a golden yellow fluid, yielding the usual reactions to bile-tests, will often follow the use, and demonstrate the cholagogue power of the drug.

"Podophyllin seems to me to rank near to scammony as a purgative, but it is milder in its action. As a cholagogue it stands pre-eminent and alone—far before mercury or any other drug that I have ever administered. I am almost tempted to say, that there is no real cholagogue known in medicine except podophyllin. Will calomel or blue pill procure in any case an

unequivocal discharge of bile apart from its purgative or laxative action—i.e., apart from its derivative influence, accompanied by increased secretion of the small and large intestines? Is not this the mode in which the biliary secretion is liberated by these mercurials? Podophyllin, on the contrary, in very small doses, will procure an abundant flow of bile, and often induce its discharge by vomiting, before, or even sometimes without, any purging. My idea respecting the *modus operandi* of mercurials is supported by very good authority—(*vide* Morehead, 'On the Diseases of India.')"—*Lancet*, *Feb.* 22, *March* 15, 1862, *pp.* 209 and 286.

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## 155.—ON PODOPHYLLIN AS AN APERIENT.

[The following is reported from Dr. Andrew Clark's practice amongst the out-patients at the London Hospital.]

If after the regulation of the diet, the sufficient use of fluid, kneading and friction of the abdomen, daily exercise, and the due solicitation of nature at regularly recurring times, the constipation remains, you must have recourse to drugs. Now the drug best fitted for the purpose, is that which will act without irritation, slowly, moderately, and by the production of a formed stool, after the manner of nature. The objections to ordinary laxatives are almost innumerable: sometimes they act too freely to permit of subsequent spontaneous regularity for some time, distension being required to excite the contractility of the bowels; at other times the bowels are teazed by frequent ineffective actions and mucous discharges are induced. In some cases the muscular contractility is exhausted, and the patient is afflicted with flatulent distensions of the bowels. In other cases the head is distracted with uneasy sensations; or there is a general nervous restlessness, for relief from which the patient flies to larger doses of more powerful purgatives, till at last life becomes little else than continuous suffering, complaint, and misery.

Now there is in my experience no single remedy for constipation so free from these objections as Podophyllin. It is not a specific for constipation, and it is not in all cases free from some of the objections attached to other remedies. But in the great majority of cases of simple constipation, it fulfils the conditions required of a safe and effectual remedy, by operating slowly, easily, and after the manner of nature.

Podophyllin (made by Davenport, of Great Russell-street, Bloomsbury,) is an amorphous resinoid powder, obtained by evaporation from an alcoholic solution of the root of the May apple (Podophyllun Peltatum). In America it is used in ten-grain doses as a cathartic, of similar characters to the resin of

jalap; but for use as a natural laxative, the maximum dose is one grain. If more than this is given, it produces griping and loose stools. For most persons a grain is too large a dose. It is better to begin with half-grain doses made into a pill with extract of taraxacum, which must be taken during breakfast, that it may operate next morning after that meal. For the first few days the operation of the drug may be accompanied by a little griping and by unformed stools. Should these continue to the fourth day, administer only quarter-grain doses, and combine them with an equal quantity of ipecacuanha. If after, the drug does not operate in the manner described, it is not likely to prove successful, and had better be relinquished. When the right dose is determined, its use may be continued without fear of injurious consequences; and instead of requiring to be increased, may after a time be diminished without affecting the success of its operation.—*Medical Times and Gazette, Jan.* 4, 1862, *p.* 10.

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## 156.—ON THE HYPODERMIC ACTION OF ATROPIA.

By John Kent Spender, Esq., Surgeon to the Eastern Dispensary, Bath.

It is now about three or four years since the hypodermic plan of administering medicines began to be pretty generally employed by the profession. It was recommended by high scientific and practical authority. Physiology sanctioned it by declaring that when a fluid material is introduced into the areolar tissue under the skin, it must necessarily all be absorbed without the intervention of any disturbing chemical or vital agency. Therapeutically, the method in question was announced as an ingenious novelty, ready of application, easy in performance, and so speedy in showing its remedial powers, as to distance all other ways of "exhibiting" drugs, just as locomotion by steam distances all other locomotive processes. Then the cases cited in illustration were nearly always unqualified cures; there was no drawback in the action of the medicine, and seldom anything to mar the permanence of its success. Surely, pharmacy and poly-pharmacy were coming to an end; and the physician would henceforth travel about with his injecting-needle and syringe just as he has been wont to do with his stethoscope, and combine the functions of doctor and nurse, by not only prescribing a dose for his patient, but by administering it too.

And yet, if I am to credit the report of some of my professional friends, scarcely anything but disappointment has resulted in their hands from this much-vaunted "hypodermic" method

of giving drugs. It is alleged that the effect of any drug s given is extremely uncertain; that unexpected and unwelcom actions are sometimes developed; and that even when a definit and lasting curative agency is evolved, it is occasionally at th expense of severe physical suffering of some kind. It is furthe asserted, that in a large percentage of cases no such curativ influence is observed, but the patient is placed in a worse stat than before; since, in addition to his malady, he has had t encounter the unfavourable workings of a medicine which migh have worked unmixed benefit if it had been administered in th ordinary way.

About a year and a-half ago, I had the pleasure of reading paper on the hypodermic action of morphia. In my hands morphia so given had procured immense and rapid mitigatio of neuralgia in various forms; in some instances, however, th relief was very transient, and in nearly all at the expense severe nausea and vomiting. These unfavourable accidents morphia led me to try atropia, the alkaloid of belladonna, as likel to fulfil the sedative effects of the morphia in a less qualifie manner. In some respects, the change has been advantageou The removal of pain has been sometimes as speedy, and ther has certainly been less disturbance of the abdominal viscera But the impairment of the functions of brain and of muscle ha been much more considerable. Illusions of the senses, delu sions of the imagination, disorder of the intellect, and torpo of the muscles, are the characteristic toxical properties belladonna: they are still more characteristic of the inorgan essence of the vegetable; but when the alkaloid itself is admi istered in the hypodermic method, it requires only a ver minute dose indeed to develope those phenomena in a ver emphatic way. And they *must* be developed in a certai measure if we wish to gain any of the desired therapeutic benefits.

One grain of pure atropia may be mixed with exactly fou drachms of distilled water, and kept in solution by two three drops of dilute acetic acid. This will form a standar solution for hypodermic use. Five drops will be the usu dose for an adult female—at least for the first time; and seve drops for the other sex under the same circumstances. Th quantity may, in each case, be cautiously increased until thr or four drops are added to the original quantity. If the do be administered at bedtime, the patient will usually soon fa asleep; he will awake two or three times in the night, and fe thirsty and giddy (one individual, speaking, apparently, from practical acquaintance with the toxic qualities of alcohol, sa he felt "very tipsy"); there is not much perspiration, in th respect contrasting strongly with morphia; the pulse is rath

slow and feeble; and the appetite is impaired for two or three days afterwards.

The most unpleasant physiological results of the atropia are the dryness of the fauces, and the sensation of enlargement of the tongue. The pupils are generally a little dilated. The intellectual hallucinations differ greatly; sometimes a person says he is flying about the air—sometimes he is tumbling off a precipice—and often there are strange and fantastic dreams. There has never been any approach to delirium from the moderate doses with which I have employed the medicine. But the alleviation of pain has been always very decided, and more lasting, though generally not so instantaneous, as after the use of morphia. I have tried both remedies at different times in the same person, and requested a comparison of their respective effects. One man, a dispensary patient, declared that the morphia seemed to "sweat the pain out of him," and to make him inexpressibly warm and comfortable for a time; but the pain gradually returned. The atropia caused him to feel very "dreamy and thirsty," but the relief was far more durable.

Is it necessary to inject the remedy over the seat of pain? Foreign and American writers testify in the affirmative; but most British practitioners seem to think it perfectly immaterial. My own limited experience does not justify me in forming a positive opinion, but I incline to the belief that, unless the pain is very superficial, the question is of no practical importance.

A mode of administering remedies which, according to the testimony of numbers of medical men, is often of most notable value, should not be allowed to fall into desuetude on account of its special disagreeable concomitants. Our efforts should be directed, I think, to the removal or diminution of these physiological unpleasantnesses; and to the elevation of the hypodermic art.—*British Med. Journal*, *Nov.* 24, 1861, *p.* 554.

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## 157.—ON THE ACTION AND USES OF ATROPIA.

By Dr. Fleming.

[A memoir on the action and uses of atropia is said to be forthcoming from the pen of Dr. Fleming. He gives atropia in solution thus:]

Atropia, 1 grain; distilled water, 5 drachms. Dissolve thoroughly with the aid of a few drops of diluted muriatic acid, and add of rectified spirit sufficient to make 10 drachms. This solution represents all the medicinal virtues of belladonna; it keeps well; and being of uniform strength, is superior to the very uncertain tincture and extract.

The above solution is so proportioned that ten minims are the commencing dose for the adult, given in a little water, once daily at bed-time, on an empty stomach. The dose is increased daily by two or four minims, until the physiological action of the drug is produced. This is attained with much precision and safety. Dr. Fleming insists on the stomach being empty, or nearly so. The same dose which produces distinct effects, if so taken, produces none on a full stomach.

The more prominent physiological effects of atropia in medicinal doses are dry throat and mouth, difficult swallowing, wide pupil, and dim sight. To these are gradually added frontal headache, giddiness, slight relaxation of the bowels, lessened urine, and increased frequency of micturition, wakefulness, and slight delirium. The following are among the most important of its applications in disease. In epilepsy it is sometimes curative, and rarely fails to afford material improvement. In chorea and neuralgia often useful, but, on the whole, less so than other medicines. In asthma it often gives great relief; but its value is, perhaps, most strikingly shown in relieving constipation, and in subduing irritability, congestion, and inflammation of the urinary systems. Hence its utility in irritable bladder, incontinence of urine, spermatorrhœa, irritable uterus, dysmenorrhœa, and other affections of those organs. Additionally, Dr. Fleming has seen it act as a parturient, with a promptitude and efficiency which he characterises as unequivocally superior to the ergot of rye. To avoid delay in inducing this effect, the drug is introduced into the cellular tissue, the solution employed being made of the same strength, but without spirit.—*Medical Times and Gazette, Dec.* 14, 1861, *p.* 618.

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## 158.—ON THE USE OF NUX VOMICA AS AN ANTIDOTE IN CASES OF POISONING BY ACONITE.

By Dr. D. D. Hanson, United States.

[Experiments have been made on animals to ascertain the applicability of aconite in cases of poisoning by strychnia. The following case confirms the opinion formed of the antagonistic action of these substances.]

The subject of it was a coloured boy, five years of age, who surreptitiously took a mixture of tincture of aconite and simple syrup. When seen by Dr. H. he was "comatose, the eyes half closed, expressionless, the pupils insensible to light, though not much dilated. The pulse was feeble and irregular, respiration requiring artificial aid to support it, and the muscles and ligaments so much relaxed that he could stand up nor sit unless supported. His respiration finally degenerated to a gasp, occur-

ring five or six times the minute, then he would convulsively straighten out in the lap of his attendant, throw his head and shoulders back, and his hands over his head, as if, mechanically, to get a longer and fuller inspiration, then relax into the same state as before.

"No time was lost in getting his feet into hot water, sinapisms on the soles of the feet, calves, and over the abdomen and chest. I failed in my attempts to get an emetic dose of mustard into the stomach, from its bulk and difficult deglutition. Ipecac and antimony being the least bulky of anything at hand, I forced down a double dose; soon after I irritated the fauces with a feather. Fifteen minutes passing, and no signs of vomiting having appeared, I repeated the dose, and irritated the throat as before. No retching occurred from this at the expiration of half an hour from the first dose, the respiration grew more difficult, and the pulse became imperceptible at the wrist. He was sinking, evidently, and the emetics were aiding the poison instead of the patient, as the muscular fibres of the stomach were rendered insensible to expulsive stimuli by the depressing influence of the poison, and the difficult respiration and deglutition were referable to the operation of the same cause upon the diaphragm and pharynx. The case now appeared desperate, unless these tissues could be excited, and nux vomica was manifestly capable of producing this effect, as its full therapeutic action was the exact opposite of that now dominant from the poison. Impressed with this idea, I gave him three drops of the tincture of nux vomica; I then placed my finger upon the wrist and awaited the result. My pleasure can be well imagined when, in a few minutes, I felt the heart's impulse returning with accelerated vigour as the tincture became more and more absorbed, and the respirations were correspondingly improved in steadiness and depth. At the end of twenty minutes I repeated the dose, soon after tickling the fauces with the feather. Retching was soon induced, and vigorous emesis followed. After this operation, young ebony opened his eyes, and after satisfying himself that matters were progressing circumspectly, he coolly lay back in the lap of his attendant, with a quiet and steady respiration and pulse. I remained half an hour longer, when I considered him safe, and left him, with directions to take three drops once in three hours during the night, allowing him to sleep during the intervals if the breathing continued regular. The next day I found him sitting in a chair, and apparently fully recovered, having rested well during the night, and taken light nourishment during the day. I left him two drop doses of the tincture for meal times during three days to insure perfect tone of the muscles.

"As corollary to this, I think it may be said that nux vomica

is a complete antidote to aconite, and, conversely, that aconite is equally an antidote to nux vomica."—*American Journal of the Medical Sciences, Jan.* 1862, *p.* 285.

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## 159.—THE TREATMENT OF SUSPENDED ANIMATION UNDER THE INFLUENCE OF CHLOROFORM.

By Dr. William Marcet, F.R.S., Assistant Physician to the Westminster Hospital.

It has frequently occurred to me that, in many instances, the final cause of death from chloroform was owing, not only to its anæsthetic properties, but also partly to spasm of the glottis. I do not mean, however, that the passage of the vapour of chloroform through the glottis and larynx has the power of causing an involuntary closure of the glottis; and I cannot agree with Dr. Black, of St. Bartholomew's Hospital, who states, "Any concentration of the vapour of chloroform which can be breathed is safe; any condition of dilution which causes the patient to cough or hold his breath is dangerous, and if persevered in for half a minute, may be fatal." I believe a spasmodic closure of the glottis to take place occasionally from the action of the chloroform which has been absorbed into the blood, and that this obstacle to the admission of air into the lungs, taken in connexion with the narcotic or anæsthetic effect of the chloroform circulating in the blood, has been in some, perhaps many, cases the actual cause of death. Should this view be correct, it will follow that if air be allowed to enter the lungs by means of tracheotomy, or by opening the glottis with a trachea-tube, or any other operation which will effect the same purpose, life will in such cases be saved.

It may be inferred that spasm of the glottis takes place occasionally under the influence of chloroform.

1st. Because several substances possessing anæsthetic properties are positively known, when present in the blood, to have given rise to closure of the glottis.

2nd. Because the symptoms of death from chloroform are consistent, more or less, with death from sudden asphyxia.

3rd. Because the post-mortem appearances after death from chloroform may be accounted for by assuming that death has taken place from asphyxia.

If it be admitted that death from chloroform be occasionally owing to spasm of the glottis, then the importance of performing tracheotomy in these cases, and adopting some means of allowing air to enter freely through the wound, will be readily understood. It must be remembered that the cases on record of recovery from suspended animation owing to an over-dose of

chloroform are very few, and, as a rule, it may be considered that, after the respiration has ceased, and the pulse become hardly perceptible at the wrist, death is inevitable. Under these circumstances, any means apparently available should be adopted. The operation of tracheotomy ought to be performed as soon as possible after the respiration has stopped, and the patient assumed that livid countenance known in these cases to precede death: the loss of every second diminishes the chance of saving life. Artificial respiration, if possible, must however not be neglected, and should be carried on before, during, and, if necessary, after the operation of tracheotomy has been performed. Artificial respiration is of great importance in connexion with death from chloroform, and I am at presently busily engaged inquiring into the subject.—*Med. Times and Gazette, Nov.* 16, 1861, *p.* 498.

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## 160.—ON THE LITHIA SPRINGS OF BADEN-BADEN.

By Dr. J. Althaus.

The salts of lithia, into the pharmaceutical properties of which Lipowitz and Mr. Alexander Ure were the first to inquire, have recently been prominently brought under the notice of the medical profession, by Dr. Garrod, who recommends them in cases of uric acid diathesis connected with gravel, and in cases of chronic gout. This recommendation is based upon the fact that lithia possesses a great affinity to uric acid, and that the urate of lithia is the most soluble of all the urates.

Lithia is especially found in the lepidolite, a kind of mica which occurs in the granite of Bohemia, and from which it is prepared in chemical manufactories. From one of these fabrics, about forty pounds of carbonate of lithia are annually sent to this country, where the salts of lithia are now so much in demand that they can scarcely be supplied in sufficient quantities. The amount of lithia, which had been found in mineral waters up to the present time, was very trifling; and it was the great rarity of this substance which prevented Mr. Ure from following up his researches on it. Quite recently, however, Professor Bunsen, of Heidelberg, has shown, by a new method of investigation, that lithia is, indeed, a substance which is most universally encountered in nature. It is well known that many substances, when introduced into a flame, have the property of imparting to the spectrum of the flame peculiar and brilliant rays, which are especially striking when the heat of the flame is very great, and its light insignificant. Upon this fact the Professor of Heidelberg has based a method of qualitative chemical analysis which has considerably enlarged the domain of chemical investigations, and has allowed to solve problems

which were hitherto believed to be unapproachable. By means of this method, Professor Bunsen discovered in the mineral spring of Dürckheim two new metals, to which he had given the names of Cæsium and Rubidium, which are closely related to potassium, and are the most electro-positive substances known. Concerning lithia, the same philosopher found that its compounds gave rise to two quite distinct rays, one of which is of a feeble yellow, and the other of a very brilliant red. By this method $\frac{1}{1000000}$th of a milligramme of carbonate of lithia may be distinctly traced, and one-fourth of a grain of the same salt causes the red ray to continue for a whole hour. The nature of the compound in which the metal exists, has no influence upon the position of the rays in the spectrum, it being the same with the chloride, the bromide, the iodide, the carbonate, the sulphate, the phosphate, and the silicate of lithia; but the intensity of the rays increase in proportion to the volatility of the compounds. Professor Bunsen has by this means discovered lithia, not only in triphylline, triphane, and petalite, but also in a large number of feldspaths, in the granite of the Odenwald, in a common spring at Schlierbach near Heidelberg, in seawater, in fucus which had been carried by the gulf-steam to the shores of Scotland, in the ashes of tobacco, of grapes, of vine-leaves, of grain of every description, of the milk of animals which had been fed upon grain, &c. Lithia has also been discovered in the ashes of the human blood and muscles. A very large quantity of it was found in two of the thermal springs of Baden-Baden, namely, the Fettquelle and the Murquelle, of which the former contains 0,2315 grains of chloride of lithia in sixteen ounces of water, and the latter 2,3649 grains of it. In one hundred pounds of the salt extracted from the Murquelle nine and three-quarter pounds of lithia are contained; that is, a quantity of this substance worth £90 sterling. This amount is not a equalled by that contained in any other mineral spring which has yet been examined.

In consequence of the analysis of these springs, made by Professor Bunsen, they have, during the last season, for the first time been extensively used in cases of gout and lithiasis; and I am indebted to my friend, Dr. Ruef, of Baden-Baden, who has treated a large number of cases of that description with them, for the following particulars regarding the results of their administration.

The physiological effects observed after taking the waters are as follows:—At first it promotes digestion, and a feeling of well-being is induced; but after they have been taken for some time, and especially when in large doses, sickness, disposition to vomiting, and diarrhœa ensue, which in most cases, however, gradually disappear, but sometimes continue

as long as the water is drunk. A constant effect is an increased elimination of urine, the quantity of which is often doubled or even trebled; it becomes turbid after some time, and large quantities of a reddish sediment are deposited in it. In some of the patients treated by Dr. Ruef, profuse perspiration came on after from five to ten days, and continued as long as the water was drunk; in the case of a lady who had not freely perspired for years, this perspiration continued two months after the cure had been finished. It therefore appears that the water is a diuretic as well as a diaphoretic.

Concerning its therapeutic action, in almost all cases the pain in the joints increased at first (especially in those patients who were in the end cured) to a rather high degree, but it never spread to healthy parts. In joints which were perfectly contracted, crackling, dragging and pulling was felt, as if the articulation was being torn asunder; but after such an attack of pain, a sensation of easiness and decided improvement was felt, and the mobility of the limb was much increased. In one patient, a Physician from Epernay, a regular fit of gout came on during the use of the water, under the continued use of which this patient so rapidly improved that he could walk about again after three days.

Gouty affections of the joints, of the sheaths of the nerves and the muscles, if not of very long standing, were cured after three or four weeks, and have remained so up to the present moment. In periodically-recurring headache on one side, which if often due to gout, the effects were also very beneficial. A lady who had been contracted for fourteen years, and who could neither stand nor walk nor carry a spoon to the mouth, was by the use of this water so much improved that she was able to walk a little, and to stand and eat by herself; while no former medication had relieved her. This patient also suffered from dysmenorrhœa, the most prominent symptoms of which were severe abdominal pain, oppression and asthma, cold and paralysis of the left arm. She had only taken the lithia water for eight days when the catamenia appeared, and were unaccompanied by any unpleasant symptoms whatever; nor did these latter reappear afterwards. In a male patient whose finger-joints were infiltrated with urate of soda, which was visible in white specks through the skin, these infiltrations were removed and the swelling diminished.

The mode of administering the water was as follows:—For patients with whom large quantities of water do not agree, five grains of the carbonate of lithia were added to a bottle of the water of Murquelle, which contains five grains of chloride of lithia; and the water was then impregnated with carbonic acid in order to render the carbonate more soluble. Of this

water a tumblerful was drunk three times a day; and if an increase of the dose appeared necessary, two or three grains of the carbonate were added to every glass. If patients are able to keep much water on the stomach, they may take six or eight tumblersful of the Murquelle, without any artificial addition of carbonate of lithia. Baths with water of the same spring were also given; and the Administration of the Spas of Baden-Baden are now occupied in preparing a mother-lye from the water of the Murquelle, in order to gain so much of the salt that it may next year be added to the baths. Of all the antarthritic remedies offered by the springs of Baden-Baden, none have proved so beneficial as this lithia spring. Dr. Ruef has, in some cases, at the same time employed the Russian vapour-baths prepared from the steam of the hottest spring of the place, which has a temperature of 155° F.—*Medical Times and Gazette, Nov.* 23, 1861, *p.* 527.

## 161.—ON SULPHURIC AND GALLIC ACIDS.

By Dr. Lumley Earle, Birmingham.

Sulphuric acid and gallic acid are at present in high repute, and justly so, as anti-hæmorrhagic medicines; but as far as I have seen the practice of others, they are never given together. Now I have tried both remedies, singly and in combination, and beg to testify to the great superiority which the two acids possess in checking hemorrhage when given together, than when only one is administered. The superiority is so striking that there seems something more than the mere fact of two acids being given instead of one. My experience has certainly been only in hemorrhages from the uterus, whether from disease or during pregnancy; but as these acids are quite as effectual in arresting hemorrhages from other organs, probably when given in combination the effect would be as striking as it certainly is in sanguineous discharges from the uterus. The doses in which they are given of course depends upon the amount of hemorrhage, or the obstinacy with which it continues.

For ordinary cases which present no unusual severity, the following mixture is sufficient:—

℞. Acid. gallici ℥ss., acid. sulphurici dil. ℥j; liq. opii sed., ℥ss.; inf. rosæ co., ℥vj. M. Cap. coch. ij. mag. tertia vel quarta quâque horâ.—*Med. Times and Gazette, Jan.* 11, 1862, *p.* 49.

## 162.—NEW REMEDY—A NEW SALT OF IRON.

By T. L. Gentles, Esq., Sheffield.

In the *Chemical News* of Sept. 21st, p. 158, there is an extract given from the *American Journal of Pharmacy* in which Herr

Emile Heydenreich claims to be the discoverer of a new salt of iron—viz., the phosphate of the sesquioxide, soluble in a solution of citrate of ammonia.

I think it but fair to my friend, Mr. J. Lightfoot, jun., of Accrington-lane, to state, that more than two years ago he prepared in his own laboratory an iron salt identical with this. Finding, like Herr Heydenreich, that in addition to this salt being soluble in a solution of citrate of ammonia, it was also soluble in hydrochloric and nitric acid, Mr. Lightfoot thought it might be of considerable service to the medical profession. It was accordingly tried, but did not realize all the expectations of its talented discoverer. Mr. Lightfoot again instituted experiments, and at last succeeded in making a magnetic phosphate of iron—a salt somewhat similar in its composition to the phosphate of the sesquioxide, but, unlike it, much more soluble in either hydrochloric or nitric acid. Pursuing his experiments still further, Mr. Lightfoot found that *the* acid which most freely and readily dissolved the salt was the citric. The proportion of magnetic phosphate of iron which this acid *in solution* will take up is more than double that which is taken up by the solution of citrate of ammonia proposed by Herr Heydenreich ; the proportion of the former being, if I remember rightly, forty-eight per cent., while that of the latter is only twenty-three per cent. You have thus a more active preparation, and one in which you can place greater confidence.

I may add that this citric acid solution of the magnetic phosphate of iron has been extensively prescribed in Lancashire. Its action in albuminuria, diabetes, and various forms of heart-disease is most striking ; while, as a tonic, it can scarcely be surpassed. It does not precipitate with sy. aurantii like most of the iron salts ; thus forming one of the most agreeable chalybeates imaginable. In proof of its physiological effects upon the system, the two following cases are adduced :—

E. C., aged fifty-six, labourer, had for many years been afflicted with valvular disease of the heart, with hypertrophy of the organ itself. He suffered at times most frightfully from palpitation, and had not been able to do any work for the last three years and a half ; the least exertion produced the most distressing effects ; even walking across a room would render him completely helpless for several minutes. He was given five minims of the magnetic phosphate of iron three times a day ; this was continued for a week, at the end of which he expressed himself as being vastly better. The treatment was pursued for a month, when the patient was able to resume his work, a thing he had not done for more than three years, as previously stated. The violence of the heart's action was greatly lessened : the man could walk six or eight miles a day without inconvenience, and gained considerably both in strength and weight.

S. H., aged 26, married, but no children, had since last March suffered more or less from severe pain in each renal region, œdema of the lower extremities, and general debility. The specific gravity of her urine was 1008, and it was perfectly coagulable at a temperature of 200° Fahr. She was ordered the following mixture three times a day: solution of the magnetic phosphate of iron, six minims; iodide of potassium, one grain; water, one drachm. After the first eight doses of this medicine the quantity of albumen was diminished to nearly one-half, and on the seventh day from the commencement of the treatment there was not a trace of albumen to be found. The specific gravity of the urine was now 1021; the œdema of the limbs was fast disappearing; the patient had regained her appetite, and in three weeks from this date was completely convalescent. Instead of the pale, weak, and dropsical patient you saw a month ago, you had now before you a woman in the enjoyment of excellent health, able to perform her household duties, and expressing herself as "perfectly well."—*Lancet, Nov.* 30, 1861, *p.* 534.

## 163.—ON CODEIA.

By Dr. Aran.

[The following are extracts from a letter written by Dr. Aran to M. Berthé.]

I have at present only employed this alkaloid to obtain ease or sleep, but from ten or twelve cases I have been able to discover in this agent sedative and narcotic properties, which appear to me to place it in the first rank among the best remedies of this kind.

Inferior to morphia for calming pain for this reason only, that a larger dose of it is required, it has a marked superiority over morphia, in that it never occasions a heavy and agitated sleep, that it does not bring on perspiration or eruptions of the skin, nor troubles the digestion, that it produces no obstinate constipation, no desire to vomit nor vomiting, no anæmia; so that the Codeia appears to me destined to be of great service in nervous diseases of the stomach, and I can assure you that we have obtained with it a relief in cases of gastrodynia, which had defied all other means, belladonna included.

But it is especially as a means of procuring a calm and restoring sleep that the codeia seems to me called to occupy an important place in therapeutics. Those stubborn and harrassing coughs of bronchitis, and particularly of consumption, those violent pains of rheumatism, gout and organic affections, of cancer, for instance, which disturb the sleep and frequently deprive the patients even of moments of repose, are forgotten in the midst of the calm and agreeable sleep which the codeia procures.

I have witnessed two very conclusive cases of incurable tumours, for which no means of relief at all lasting had been found. One of these tumours, of an enormous size, almost filled the pelvis and produced on the passage of the sciatic nerve pains returning about eight o'clock p.m. with such an intensity as to force cries from the patient, who only became calm towards the morning when she fell asleep overcome with fatigue. Two centigrammes of codeia* produced the first day a calm so complete that the patient thought herself cured, and for the first time since a month she was able to take a somewhat copious meal, her appetite having returned for the first time.

During the twelve days I attended this patient, the pains were almost null, and as soon as they reappeared she mastered them by a few centigrammes of codeia; it became, however, necessary to increase the dose by degrees, and from two centigrammes the patient increased the dose to ten centigrammes.

To explain how so small a dose produced a calm so complete, I must add that her weak state rendered her very sensitive to the action of codeia, which, on the other hand, appears to me able to be given from the first in a much larger dose than morphia. The dose of five centigrammes of it in the syrup, for example, we have seen calm the pains of gastrodynia without leaving the slightest trace of narcotism, and one of our patients takes at present every day fifteen centigrammes of codeia without any bad effect.

This patient, who has long made use of opium and morphia, established between these agents and the codeia a difference quite to the advantage of the latter which does not agitate her at all.—*Medical Times and Gazette*, *Dec.* 7, 1861, *p.* 599.

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## 164.—CASE OF POISONING BY ALMOND FLAVOUR.

By Dr. T. Herbert Barker, F.R.S.E., Bedford.

In the evening of the 6th of December last, I received an urgent message to see a young lad residing near to my house. The messenger said he had been poisoned by drinking "almond flavour." I took at once with me a bottle containing ipecacuanha powder. The little patient, a youth of 6 years of age, was much prostrated, very pale; the eyes bright, prominent, and glassy, and the pupils dilated. The pulse was small and quick. He appeared to have considerable uneasiness in the throat; but fortunately the power of swallowing had not been lost. A brimming teaspoonful of the powdered ipecacuanha was immediately mixed with warm water and given to him, and the cold affusion had recourse to. Within three minutes from the first dose, as vomiting had not commenced, I mixed another teaspoonful of

* One centigramme is equal to one-sixth of a grain.

powdered ipecacuanha with warm water, adding to it a small quantity of mustard and common table salt. I then gave him brandy and water at frequent intervals. Within two minutes after the second dose, free vomiting commenced. The ejected matters smelled strongly of bitter almonds. The cold affusion was persevered with, and the frequent administration of warm brandy and water, as well as the application of ammonia vapour to the nostrils. Free vomiting continued, and the ejecta became less and less flavoured with bitter almonds. Vomiting, however, was encouraged until the fluid introduced into the stomach was returned free from odour. The pulse rapidly improved, and in half an hour he was apparently out of danger. I sent him to bed, after directing him to have a foot bath, and a teacupful of brandy-gruel. The next morning he was running about.

*Remarks.*—The composition of "almond flavour," spirit of almonds, or essence of peach kernels, is usually of one drachm of the essential oil of bitter almonds to seven drachms of spirits of wine. I am informed by a respectable chemist and druggist in Bedford that he believes that this is the usual composition of the "flavour"; but that there is no authentic standard formula for its preparation. Dr. Taylor remarks: "It is sold to the public in quantities of not less than a quarter of an ounce, at the rate of one shilling per ounce, for the purpose of giving a pleasant flavour to pastry. It may be as well to state that one ounce of this almond flavour is, at the lowest computation, equivalent in strength to 250 grains of the Pharmacopœial prussic acid. In some cases, it may happen to be nearly equal in strength to this poison, and yet it is sold without restriction, and is entrusted in private families in the hands of ignorant cooks to apportion the dose which may give the requisite flavour to food!" (*On Poisons*, 2nd edit., p. 687.)

From the quantity known to have been in the bottle beforehand, the mother of my patient has no doubt that he had swallowed two teaspoonfuls of the liquid. From the severe effects produced, and the intensity of the odour of the vomited matters, I think it probable that he did not swallow a smaller quantity than that. He drank it from the bottle, which is rather a wide-mouthed one, and from which it would flow readily. The smell and taste are not disagreeable, the latter somewhat pungent. Two drachms of the "almond flavour" would contain fifteen minims of the essential oil. Taylor mentions a case under the care of Dr. Bull of Hereford, in which seventeen drops of the essential oil killed in half an hour. Dr. Bull saw the patient in about fifteen minutes. (*Op. cit.*, p. 688.) This was the smallest dose of the oil known to prove fatal. In a case recited by Mr. Chavasse, where half a drachm or thirty minims of the oil had been taken, recovery took place with difficulty.

Fatal cases not unfrequently occur from the administration of

the essential oil of bitter almonds, in mistake for the oil of almonds. Two such cases have been recently recorded in the *Pharmaceutical Journal*. In both cases, the essential oil had been used instead of the oil of almonds, and mixed with the syrup of violets. In the one case, a teaspoonful of the mixture proved fatal in a quarter of an hour to a child fifteen months old. (*Pharm. Jour.*, May 1859, p. 583.) In the other case, a "small" dose of the mixture proved fatal in three-quarters of an hour to a child nine months old. (*Pharm. Journ.*, Jan. 1860, p. 389.)

There can be but little doubt that the life of this boy was saved by the speedy emetic effect which was fortunately produced at a very early period after the poison had been swallowed. He lived within a few yards of my house, the messenger brought a precise and intelligible account of the mischief, and I did not stop even to weigh or measure any emetic, but took down and ran off with an ipecacuanha bottle. I probably saw him within five minutes of the accident. In any similar case, I would recommend the fullest possible dose of an emetic to be administered as early as possible, and the emetic effect to be encouraged in every possible way. I have a high opinion of the cold affusion, and of the restorative effect of ammonia applied to the nose. These may be applied in the intervals between the administration of the emetic doses, but by no means in lieu of them. There can be no safety but in the *thorough emptying and washing out of the stomach*. If the power of swallowing has been lost, the stomach-pump must, of course, be used.—*British Medical Journal, Dec.* 21, 1861, *p.* 655.

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165.—*Biniodide of Mercury Ointment in Goitre.*—[Mr. Thos. Stainthorpe, of Hexham, offers his testimony to the efficacy of this treatment of goitre (see page 261). He says :]

For about twelve years I have been in the habit of prescribing it. My plan, hitherto, has been of having it freely rubbed in the part, night and morning, after each application the enlargement was covered by oiled silk ; in a few days the full effect is produced, when the biniodide ointment is laid aside and simple spermaceti ointment and oiled silk substituted. If the enlargement is not thoroughly dispersed, the same mode of treatment is resumed until the results are satisfactory.

I have never seen any injurious effects from the use of this ointment, but on the contrary have always had every reason to be satisfied with the beneficial effects. The proportions I usually apply are biniod. hydr. ℈j., auxungiæ ℥j., in some rare cases it has been requisite to use it stronger.—*Medical Times and Gazette, Dec.* 7, 1861, *p.* 599.

## 166.—ON VESICO-VAGINAL FISTULA.

By I. Baker Brown, Esq., Senior Surgeon to the London Surgical Home.

[Mr. Baker Brown has now operated in a total number of forty-nine cases of vesico-vaginal fistula. Of this number forty-seven have been cured, and two died.]

As there may be many who have not witnessed the operation for vesico-vaginal fistula, I shall, previous to relating the cases, say a few words as to the present mode of operating on these cases. There have been many improvements and alterations suggested; but I think it will be agreed that the plan I at present pursue is about as easy and perfect as can possibly be.

The patient being placed under the influence of chloroform in the lithotomy position, or without on her hands and knees, the bent speculum is introduced, and, if in the former position, the urethra held up by a pair of vulsellum forceps. The first step is to pare the edges of the fistula. This is done by knives made for the purpose, one for the right and the other for the left hand; the fistula being held meanwhile either by a pair of forceps, or transfixed by a curved needle. The latter is perhaps preferable, as, besides everting both edges of the fistula, it has the advantage of having a needle inserted ready to be armed in the second stage. This consists in passing needles, made on the same principle as Startin's; but instead of being of flexible material, they are made of rigid steel, and with various curves—fourteen in all. The needle is passed within a quarter of an inch external to the denuded surface, and thrust through the coats of the vagina and the muscular tunic of the bladder, avoiding its mucous lining, and out again on the opposite side at the same distance from the fistula. The wire having been previously passed, the neede is drawn out, the wire being held in by forceps to be fastened. This is extremely simple. I have used shots and buttons, and have invented clamps, &c., but I have come to the conclusion that nothing is so easy or effectual as simply to twist the wire round and round with the fingers, or if too far to reach thus, by Weiss' self-holding forceps. The ends of the wire are cut, and the operation is complete. No dressing is required. The patient is placed in bed on her side, with her knees drawn up. A male elastic catheter, without the stilette and with bag attached, is introduced, and the patient left quiet for ten or fourteen days; when, to take out the wires, one has only to cut them on one side of the twist, and draw them out with forceps in the ordinary manner.—*Lancet, Nov.* 22, 1861, *p.* 494.

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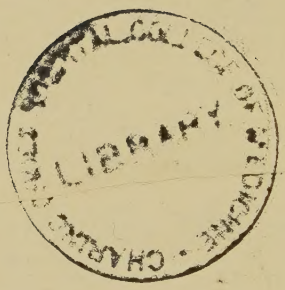
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